

FADE TO BLACK

with **JIMMY CHURCH**
PRESENTS

ISAAC ARTHUR
TIME TRAVEL

WED AUG 03 LIVE
7:00 PM PT/10:00PM ET



1
00:03:31,110 --> 00:03:28,149

[Music]

2
00:03:34,070 --> 00:03:31,120

bespoke radio for the masses headline

3
00:03:35,910 --> 00:03:34,080

edition july 8th 1947

4
00:03:38,390 --> 00:03:35,920

the army air forces has announced that a

5
00:03:40,070 --> 00:03:38,400

flying disc has been found and is now in

6
00:03:42,789 --> 00:03:40,080

the possession of the army

7
00:03:44,789 --> 00:03:42,799

if the game is rigged change the game

8
00:03:47,670 --> 00:03:44,799

game changer

9
00:03:49,990 --> 00:03:47,680

i occasionally think how quickly

10
00:03:51,270 --> 00:03:50,000

our differences worldwide

11
00:03:53,990 --> 00:03:51,280

would vanish

12
00:03:57,360 --> 00:03:54,000

if we were facing an alien threat from

13
00:03:58,510 --> 00:03:57,370

outside this world

14

00:04:00,229 --> 00:03:58,520

[Applause]

15

00:04:02,949 --> 00:04:00,239

[Music]

16

00:04:05,670 --> 00:04:02,959

this is fade to black with your host

17

00:04:09,270 --> 00:04:05,680

jimmy church on the game changer radio

18

00:04:13,600 --> 00:04:11,429

i need your help to get to the year

19

00:04:18,310 --> 00:04:13,610

1985.

20

00:04:23,450 --> 00:04:20,310

you are listening to fade to flag with

21

00:04:34,070 --> 00:04:23,460

jimmy church on the game changer network

22

00:04:35,510 --> 00:04:34,080

[Music]

23

00:04:40,189 --> 00:04:35,520

good evening

24

00:04:45,110 --> 00:04:43,510

bespoke radio

25

00:04:47,270 --> 00:04:45,120

for

26

00:04:49,670 --> 00:04:47,280

the

27

00:04:52,629 --> 00:04:49,680

masses

28

00:04:55,960 --> 00:04:52,639

i am and today's wednesday

29

00:05:03,670 --> 00:04:55,970

august 3rd 2022.

30

00:05:05,110 --> 00:05:03,680

[Music]

31

00:05:06,870 --> 00:05:05,120

i would like to welcome everybody

32

00:05:09,510 --> 00:05:06,880

listening all around the world all

33

00:05:11,590 --> 00:05:09,520

across the united states

34

00:05:13,830 --> 00:05:11,600

hither and tether to and fro back and

35

00:05:17,189 --> 00:05:13,840

forth up and down east and west north

36

00:05:20,629 --> 00:05:17,199

and south far and near

37

00:05:24,790 --> 00:05:20,639

this is fade to black for kjcr the annex

38

00:05:26,870 --> 00:05:24,800

game changer networks racehobbs

39

00:05:29,189 --> 00:05:26,880

i'm yours jimmy church what is cracking

40

00:05:31,430 --> 00:05:29,199

everybody how you doing

41

00:05:35,909 --> 00:05:31,440

how you doing

42

00:05:44,310 --> 00:05:39,110

i barely made it

43

00:05:46,390 --> 00:05:44,320

fresh off the set i haven't changed this

44

00:05:47,830 --> 00:05:46,400

is it

45

00:05:51,670 --> 00:05:47,840

and uh

46

00:05:53,909 --> 00:05:51,680

yeah yeah what a what a busy day today

47

00:05:56,550 --> 00:05:53,919

i popped a live stream up earlier if you

48

00:05:59,590 --> 00:05:56,560

want to check it out over on facebook uh

49

00:06:01,189 --> 00:05:59,600

where i was and what i was doing i was

50

00:06:04,070 --> 00:06:01,199

shooting a film today

51
00:06:07,830 --> 00:06:04,080
and uh it was a lot of fun and uh more

52
00:06:09,430 --> 00:06:07,840
on that in just a bit um amazing crew

53
00:06:11,029 --> 00:06:09,440
uh

54
00:06:12,230 --> 00:06:11,039
i love

55
00:06:13,670 --> 00:06:12,240
um

56
00:06:15,510 --> 00:06:13,680
i've been i've been pretty blessed

57
00:06:18,550 --> 00:06:15,520
working with professionals you know when

58
00:06:22,150 --> 00:06:18,560
you have a you know just a pro

59
00:06:24,150 --> 00:06:22,160
pro crew like that it was it was it was

60
00:06:28,390 --> 00:06:24,160
insane it was great

61
00:06:32,950 --> 00:06:30,710
yeah man and i'll tell you more about it

62
00:06:35,830 --> 00:06:32,960
later because i can't talk about it

63
00:06:38,550 --> 00:06:35,840

um but uh once the trailer uh gets

64

00:06:41,590 --> 00:06:38,560

released and and that stuff happens then

65

00:06:43,029 --> 00:06:41,600

uh i'll speak uh about uh what what

66

00:06:44,469 --> 00:06:43,039

things are about and what's going on of

67

00:06:46,710 --> 00:06:44,479

course you know we'll promote it here on

68

00:06:50,309 --> 00:06:46,720

the show but a lot of fun very

69

00:06:53,029 --> 00:06:50,319

professional very cool okay um and i'll

70

00:06:54,710 --> 00:06:53,039

circle around to that now because

71

00:06:57,990 --> 00:06:54,720

uh

72

00:06:59,350 --> 00:06:58,000

we we shot today

73

00:07:02,950 --> 00:06:59,360

uh

74

00:07:04,710 --> 00:07:02,960

i just walked into the studio

75

00:07:06,710 --> 00:07:04,720

[Laughter]

76

00:07:11,270 --> 00:07:06,720

basically

77

00:07:13,430 --> 00:07:11,280

that's it so you get what you get and uh

78

00:07:16,070 --> 00:07:13,440

it's a good thing this show uh

79

00:07:17,029 --> 00:07:16,080

is free

80

00:07:19,350 --> 00:07:17,039

today

81

00:07:20,550 --> 00:07:19,360

uh if isaac arthur wasn't here to bail

82

00:07:23,430 --> 00:07:20,560

me out

83

00:07:25,029 --> 00:07:23,440

i'm gonna just tell you that right now

84

00:07:27,350 --> 00:07:25,039

and uh he's gonna be with us at the

85

00:07:29,430 --> 00:07:27,360

bottom of the hour and uh so there you

86

00:07:31,110 --> 00:07:29,440

go let's uh let's get straight to it

87

00:07:32,950 --> 00:07:31,120

tonight isaac arthur is here we're going

88

00:07:33,749 --> 00:07:32,960

to be talking about time travel tomorrow

89

00:07:41,510 --> 00:07:33,759

night

90

00:07:43,270 --> 00:07:41,520

and i always look forward uh to uh

91

00:07:44,550 --> 00:07:43,280

thursday night and being able to just

92

00:07:46,629 --> 00:07:44,560

hang out with

93

00:07:48,710 --> 00:07:46,639

with uh all of you our friends and

94

00:07:50,070 --> 00:07:48,720

family here at the show so that's going

95

00:07:51,990 --> 00:07:50,080

on tomorrow night

96

00:07:53,670 --> 00:07:52,000

and um i was speaking to a friend of

97

00:07:55,589 --> 00:07:53,680

mine today

98

00:07:56,950 --> 00:07:55,599

uh another i don't know what it is with

99

00:07:59,510 --> 00:07:56,960

me in film

100

00:08:00,469 --> 00:07:59,520

uh lately but uh today i was speaking

101
00:08:03,510 --> 00:08:00,479
with a

102
00:08:05,350 --> 00:08:03,520
another director and producer uh today

103
00:08:07,110 --> 00:08:05,360
about stuff and

104
00:08:11,029 --> 00:08:07,120
and i said hey

105
00:08:13,670 --> 00:08:11,039
you need to come up tuesday august 16th

106
00:08:14,710 --> 00:08:13,680
and and hang out with us at you parsha

107
00:08:18,230 --> 00:08:14,720
and

108
00:08:19,749 --> 00:08:18,240
did i say she okay all right so yeah i

109
00:08:22,390 --> 00:08:19,759
gave that much away

110
00:08:24,629 --> 00:08:22,400
and she said yeah

111
00:08:27,510 --> 00:08:24,639
you need to come out and hang out with

112
00:08:29,589 --> 00:08:27,520
us too that's tuesday night august 16th

113
00:08:31,909 --> 00:08:29,599

right here in los angeles actually it's

114

00:08:33,430 --> 00:08:31,919

in the valley it's studio city

115

00:08:36,630 --> 00:08:33,440

california

116

00:08:39,190 --> 00:08:36,640

at uh the u-pars get-together and in

117

00:08:42,389 --> 00:08:39,200

studio city and tickets and information

118

00:08:43,750 --> 00:08:42,399

are at uparsla.org

119

00:08:46,710 --> 00:08:43,760

come and hang out with us and you'll

120

00:08:49,269 --> 00:08:46,720

meet who i spoke to today

121

00:08:51,190 --> 00:08:49,279

wouldn't that be fun

122

00:08:53,110 --> 00:08:51,200

absolutely

123

00:08:55,910 --> 00:08:53,120

all right so

124

00:08:57,829 --> 00:08:55,920

um i love to have dinners and and hang

125

00:08:59,110 --> 00:08:57,839

out and drink some sky watches and

126
00:09:01,430 --> 00:08:59,120
things and

127
00:09:05,509 --> 00:09:01,440
and uh just interesting stuff going on

128
00:09:08,389 --> 00:09:05,519
in the skies and stuff was popping today

129
00:09:11,350 --> 00:09:08,399
during the day and anyway love to do

130
00:09:13,430 --> 00:09:11,360
that on the week my weekends are shot

131
00:09:15,750 --> 00:09:13,440
uh until the end of the year well

132
00:09:18,949 --> 00:09:15,760
actually until spring

133
00:09:21,590 --> 00:09:18,959
um like coming up september 16th i'll be

134
00:09:23,030 --> 00:09:21,600
in joshua tree for a private sky watch

135
00:09:25,910 --> 00:09:23,040
out there we'll we're going to do that

136
00:09:27,910 --> 00:09:25,920
in joshua tree and also over at giant

137
00:09:31,310 --> 00:09:27,920
rock all you've got to do is go to

138
00:09:32,870 --> 00:09:31,320

forbidden club that's with the four

139

00:09:35,430 --> 00:09:32,880

forbiddenclub.com

140

00:09:37,829 --> 00:09:35,440

mint 10 nfts

141

00:09:38,790 --> 00:09:37,839

get your forbidden knowledge black card

142

00:09:40,550 --> 00:09:38,800

and then you're going to get an

143

00:09:44,230 --> 00:09:40,560

invitation to come and hang out with us

144

00:09:45,829 --> 00:09:44,240

okay it's a good to be very small and

145

00:09:47,430 --> 00:09:45,839

personal and private it's going to be

146

00:09:49,990 --> 00:09:47,440

great and

147

00:09:52,630 --> 00:09:50,000

so come in and do that billy carson

148

00:09:55,350 --> 00:09:52,640

myself elizabeth is going to be there

149

00:09:56,870 --> 00:09:55,360

and i already know uh a few other people

150

00:09:58,790 --> 00:09:56,880

that are going to be there you want to

151

00:10:02,870 --> 00:09:58,800

you want to do this this is one of those

152

00:10:04,949 --> 00:10:02,880

events uh this is a once-in-a-lifetime

153

00:10:07,670 --> 00:10:04,959

uh event where you're going to be able

154

00:10:10,230 --> 00:10:07,680

to be with a small group of people

155

00:10:13,509 --> 00:10:10,240

um night vision uh

156

00:10:14,470 --> 00:10:13,519

uh goggles uh for everybody and and and

157

00:10:19,910 --> 00:10:14,480

just

158

00:10:21,750 --> 00:10:19,920

go to forbiddenclub.com

159

00:10:22,790 --> 00:10:21,760

and mint those nfts and come and hang

160

00:10:26,790 --> 00:10:22,800

out with us

161

00:10:28,710 --> 00:10:26,800

and then uh october i'll be in egypt and

162

00:10:31,910 --> 00:10:28,720

that's for my birthday

163

00:10:33,910 --> 00:10:31,920

really looking forward to that and then

164

00:10:36,389 --> 00:10:33,920

coming up next uh

165

00:10:37,430 --> 00:10:36,399

the major events will be conscious life

166

00:10:40,389 --> 00:10:37,440

expo

167

00:10:42,150 --> 00:10:40,399

and then uh the cruise uh conscious life

168

00:10:45,509 --> 00:10:42,160

expos in february

169

00:10:47,670 --> 00:10:45,519

and the cruise that departs here in l.a

170

00:10:49,990 --> 00:10:47,680

is in april

171

00:10:52,310 --> 00:10:50,000

okay so yeah lots of things coming up

172

00:10:54,150 --> 00:10:52,320

and it just feels feels awesome to get

173

00:10:55,590 --> 00:10:54,160

back on track but it just means no more

174

00:10:57,990 --> 00:10:55,600

barbecues

175

00:11:00,870 --> 00:10:58,000

for the next six months and plus i've

176
00:11:03,350 --> 00:11:00,880
got a shooting schedule that happens in

177
00:11:05,910 --> 00:11:03,360
between so this is the deal

178
00:11:07,509 --> 00:11:05,920
so i get the uh the shooting schedule

179
00:11:10,230 --> 00:11:07,519
from the network and so i've got the

180
00:11:11,110 --> 00:11:10,240
dates those are blocked out weekends

181
00:11:16,150 --> 00:11:11,120
and

182
00:11:17,590 --> 00:11:16,160
everything else that is there so

183
00:11:20,230 --> 00:11:17,600
which means

184
00:11:21,269 --> 00:11:20,240
that every weekend that i don't have

185
00:11:22,710 --> 00:11:21,279
something

186
00:11:24,150 --> 00:11:22,720
booked

187
00:11:25,750 --> 00:11:24,160
i'm shooting

188
00:11:32,790 --> 00:11:25,760

that's it

189

00:11:37,350 --> 00:11:35,190

it's now it's back to pre-pandemic

190

00:11:39,910 --> 00:11:37,360

levels get your free membership right

191

00:11:42,790 --> 00:11:39,920

now to the unex network it's simple to

192

00:11:46,069 --> 00:11:42,800

do go to the unx xnetwork.com

193

00:11:47,430 --> 00:11:46,079

racehobs go to thenxnetwork.com

194

00:11:49,670 --> 00:11:47,440

rgk

195

00:11:51,350 --> 00:11:49,680

and you'll receive their monthly

196

00:11:54,069 --> 00:11:51,360

newsletter you're going to get a blog

197

00:11:55,670 --> 00:11:54,079

access you're going to get event notices

198

00:11:58,470 --> 00:11:55,680

and you're going to get a free digital

199

00:12:01,310 --> 00:11:58,480

copy of their quarterly magazine and

200

00:12:03,269 --> 00:12:01,320

it's all simple to do just go to the

201
00:12:04,389 --> 00:12:03,279
xnetwork.com some of you are already

202
00:12:07,190 --> 00:12:04,399
there go

203
00:12:09,190 --> 00:12:07,200
and become a member it's simple it's

204
00:12:12,389 --> 00:12:09,200
free and it's easy

205
00:12:15,590 --> 00:12:12,399
all right also right now eden pure

206
00:12:17,509 --> 00:12:15,600
the best man the best the thunderstorm i

207
00:12:19,509 --> 00:12:17,519
talk about about it every night on the

208
00:12:22,230 --> 00:12:19,519
show you have to understand this is

209
00:12:24,710 --> 00:12:22,240
running right now next to me in the

210
00:12:26,470 --> 00:12:24,720
studio you don't hear it you hear a fan

211
00:12:28,629 --> 00:12:26,480
running do you hear something you don't

212
00:12:32,710 --> 00:12:28,639
and this is what it's like in your home

213
00:12:34,629 --> 00:12:32,720

this is a sound proof studio

214

00:12:35,750 --> 00:12:34,639

that's it sound

215

00:12:38,949 --> 00:12:35,760

proof

216

00:12:41,190 --> 00:12:38,959

okay it's dead nuts quiet in here

217

00:12:43,910 --> 00:12:41,200

and and that's an international standard

218

00:12:44,949 --> 00:12:43,920

by the way dead nuts quiet you can look

219

00:12:46,870 --> 00:12:44,959

it up

220

00:12:49,350 --> 00:12:46,880

when you go to the standards

221

00:12:51,910 --> 00:12:49,360

of quietness and soundproofing

222

00:12:54,710 --> 00:12:51,920

at the top of the list is dead nuts dead

223

00:12:57,430 --> 00:12:54,720

nuts quiet that's how quiet it is in

224

00:12:59,269 --> 00:12:57,440

here and this is running right next to

225

00:13:01,110 --> 00:12:59,279

me you can do the same thing in your

226

00:13:03,829 --> 00:13:01,120

house you're not going to hear it you're

227

00:13:06,230 --> 00:13:03,839

only going to smell it it is going to

228

00:13:07,990 --> 00:13:06,240

get rid of all of those odors it's going

229

00:13:10,629 --> 00:13:08,000

to kill viruses you can plug it in the

230

00:13:13,030 --> 00:13:10,639

wall runs usb put it in your car

231

00:13:14,949 --> 00:13:13,040

put it in your truck put one in your

232

00:13:17,750 --> 00:13:14,959

bathroom

233

00:13:20,310 --> 00:13:17,760

that's right thunderstorm

234

00:13:23,590 --> 00:13:20,320

it's absolutely incredible i i i can't

235

00:13:25,750 --> 00:13:23,600

live without mine now i simply can't and

236

00:13:26,870 --> 00:13:25,760

the promo code for their three pack

237

00:13:29,590 --> 00:13:26,880

special

238

00:13:32,389 --> 00:13:29,600

is fader three so you get three you get

239

00:13:34,629 --> 00:13:32,399

free shipping and you save over two

240

00:13:37,110 --> 00:13:34,639

hundred dollars on that three pack

241

00:13:39,829 --> 00:13:37,120

special so click on the link below and

242

00:13:42,310 --> 00:13:39,839

head over to edenpure

243

00:13:44,310 --> 00:13:42,320

all right links for everything all of

244

00:13:46,269 --> 00:13:44,320

our sponsors are in the description box

245

00:13:48,069 --> 00:13:46,279

below and of course you can visit

246

00:13:49,430 --> 00:13:48,079

jimmychurchradio.com we've got banners

247

00:13:51,990 --> 00:13:49,440

and ads over there

248

00:13:53,430 --> 00:13:52,000

visit all of our sponsors today follow

249

00:13:56,230 --> 00:13:53,440

me on twitter

250

00:13:59,110 --> 00:13:56,240

at j church radio

251
00:14:01,829 --> 00:13:59,120
that's right you can follow isaac arthur

252
00:14:04,310 --> 00:14:01,839
on on twitter but he's got a messed up

253
00:14:07,509 --> 00:14:04,320
twitter handle it's like

254
00:14:09,590 --> 00:14:07,519
um he's got the geek nerd physicist

255
00:14:10,790 --> 00:14:09,600
twitter handle it's like

256
00:14:15,269 --> 00:14:10,800
um

257
00:14:16,870 --> 00:14:15,279
a underscore i underscore arthur

258
00:14:19,910 --> 00:14:16,880
underscore

259
00:14:22,230 --> 00:14:19,920
you know he's he's got one of those so

260
00:14:24,389 --> 00:14:22,240
um i've got it up in twitter you can't

261
00:14:25,910 --> 00:14:24,399
but i just i i can't even memorize it i

262
00:14:29,350 --> 00:14:25,920
have to go and look it up

263
00:14:30,629 --> 00:14:29,360

i and is it because i bet you i know why

264

00:14:33,430 --> 00:14:30,639

he had to do that

265

00:14:35,829 --> 00:14:33,440

because everybody is imitating

266

00:14:37,990 --> 00:14:35,839

isaac arthur and so he's got to have

267

00:14:40,710 --> 00:14:38,000

that unique thing he's got to have that

268

00:14:42,550 --> 00:14:40,720

unique thing but go and follow isaac you

269

00:14:44,470 --> 00:14:42,560

know what i do with isaac i'm going to

270

00:14:45,910 --> 00:14:44,480

give everybody uh

271

00:14:47,829 --> 00:14:45,920

uh a tip

272

00:14:49,590 --> 00:14:47,839

his website is easy

273

00:14:51,110 --> 00:14:49,600

isaacarthur.net

274

00:14:55,189 --> 00:14:51,120

that's what i do to get his twitter

275

00:14:57,910 --> 00:14:55,199

handle i go over to when i

276

00:15:00,150 --> 00:14:57,920

it is so funny futurism with isaac

277

00:15:02,230 --> 00:15:00,160

arthur right i can't remember that

278

00:15:03,829 --> 00:15:02,240

but i can remember isaacarthur.net i

279

00:15:06,230 --> 00:15:03,839

click on that i go over i've got his

280

00:15:07,430 --> 00:15:06,240

youtube channel i've got his social

281

00:15:09,750 --> 00:15:07,440

media

282

00:15:13,030 --> 00:15:09,760

and uh and i'm just letting everybody

283

00:15:14,949 --> 00:15:13,040

know i do it all the time so head over

284

00:15:16,790 --> 00:15:14,959

to isaacarthur.net everything that you

285

00:15:19,509 --> 00:15:16,800

need is right there

286

00:15:22,310 --> 00:15:19,519

um i didn't have a whole time uh renee i

287

00:15:24,790 --> 00:15:22,320

apologize you did an amazing job today

288

00:15:28,230 --> 00:15:24,800

on the news but i wasn't here to deal

289

00:15:30,230 --> 00:15:28,240

with it but uh i did get this from renee

290

00:15:31,749 --> 00:15:30,240

in the breaking news and i wanted to

291

00:15:34,949 --> 00:15:31,759

share this with you

292

00:15:37,430 --> 00:15:34,959

because apparently

293

00:15:40,389 --> 00:15:37,440

oh finally going to check this out this

294

00:15:44,230 --> 00:15:40,399

is olivia posting my

295

00:15:46,150 --> 00:15:44,240

second favorite breakfast cereal

296

00:15:49,110 --> 00:15:46,160

trader joe's

297

00:15:51,749 --> 00:15:49,120

maple pecan clusters

298

00:15:54,230 --> 00:15:51,759

that that right there

299

00:15:56,230 --> 00:15:54,240

now don't do no almond milk you don't

300

00:15:57,990 --> 00:15:56,240

want to mess it up with oat milk which

301
00:15:59,430 --> 00:15:58,000
is dirt milk you don't you don't want to

302
00:16:01,110 --> 00:15:59,440
do any of that

303
00:16:04,470 --> 00:16:01,120
you know you want

304
00:16:05,829 --> 00:16:04,480
organic whole milk you don't play around

305
00:16:09,350 --> 00:16:05,839
ice cold

306
00:16:11,350 --> 00:16:09,360
and that is the best cereal in the world

307
00:16:12,710 --> 00:16:11,360
well i will interrupt

308
00:16:16,150 --> 00:16:12,720
fade to black

309
00:16:19,030 --> 00:16:16,160
for trader joe's pecan crunch man

310
00:16:19,990 --> 00:16:19,040
maple pecan there it is i love that i've

311
00:16:21,590 --> 00:16:20,000
got it

312
00:16:23,110 --> 00:16:21,600
you know what during the break i'm going

313
00:16:25,030 --> 00:16:23,120

to walk

314

00:16:27,829 --> 00:16:25,040

into my kitchen and i'm going to come

315

00:16:30,069 --> 00:16:27,839

back with a box trader joe's

316

00:16:31,749 --> 00:16:30,079

maple pecan i think that there's a

317

00:16:33,350 --> 00:16:31,759

captain crunch peanut butter crunch

318

00:16:34,870 --> 00:16:33,360

shortage

319

00:16:36,389 --> 00:16:34,880

uh the last

320

00:16:38,790 --> 00:16:36,399

month

321

00:16:39,990 --> 00:16:38,800

at my local supermarket which is a big

322

00:16:42,470 --> 00:16:40,000

one

323

00:16:43,990 --> 00:16:42,480

no peanut butter crunch now is it

324

00:16:46,550 --> 00:16:44,000

because that everybody shops at the

325

00:16:48,470 --> 00:16:46,560

store listens to the show and

326

00:16:50,470 --> 00:16:48,480

they know about my love for peanut

327

00:16:52,949 --> 00:16:50,480

butter crunch and they get the urge and

328

00:16:54,470 --> 00:16:52,959

and there's this there's this mad rush

329

00:16:56,550 --> 00:16:54,480

for it at the store

330

00:16:58,310 --> 00:16:56,560

has it been discontinued i haven't

331

00:16:59,269 --> 00:16:58,320

looked at it in the news

332

00:17:01,509 --> 00:16:59,279

why

333

00:17:03,189 --> 00:17:01,519

is there a captain crunch peanut butter

334

00:17:05,189 --> 00:17:03,199

crunch shortage

335

00:17:07,829 --> 00:17:05,199

and are you guys having issues in your

336

00:17:09,829 --> 00:17:07,839

area this is actually a very big deal i

337

00:17:12,949 --> 00:17:09,839

think it's a conspiracy

338

00:17:13,829 --> 00:17:12,959

and i want to hear from all of you

339

00:17:15,350 --> 00:17:13,839

so

340

00:17:16,829 --> 00:17:15,360

chatroom

341

00:17:21,350 --> 00:17:16,839

twitter

342

00:17:23,350 --> 00:17:21,360

facebook let me know somebody text me

343

00:17:24,949 --> 00:17:23,360

is there some news

344

00:17:26,949 --> 00:17:24,959

about peanut butter crunch is there a

345

00:17:28,950 --> 00:17:26,959

peanut butter shortage oh that would be

346

00:17:33,270 --> 00:17:28,960

a disaster right

347

00:17:34,150 --> 00:17:33,280

why can i not buy all the reese's puffs

348

00:17:37,029 --> 00:17:34,160

right

349

00:17:38,230 --> 00:17:37,039

shelves of that i don't want reese's

350

00:17:40,390 --> 00:17:38,240

puffs

351

00:17:42,390 --> 00:17:40,400

it's not that good actually it looks

352

00:17:45,590 --> 00:17:42,400

good on the box but it's it's not that

353

00:17:47,669 --> 00:17:45,600

good peanut butter crunches is the deal

354

00:17:48,710 --> 00:17:47,679

can't buy it

355

00:17:50,870 --> 00:17:48,720

all right

356

00:17:53,029 --> 00:17:50,880

now oh yeah back to the breaking news i

357

00:17:53,830 --> 00:17:53,039

thank you olivia for interrupting the

358

00:17:56,150 --> 00:17:53,840

show

359

00:18:00,470 --> 00:17:56,160

uh that was uh totally awesome

360

00:18:02,710 --> 00:18:00,480

uh trader joe's uh breaking news nasa

361

00:18:04,950 --> 00:18:02,720

is not trusting

362

00:18:06,870 --> 00:18:04,960

private citizens

363

00:18:09,190 --> 00:18:06,880

to travel to the international space

364

00:18:11,510 --> 00:18:09,200

station alone

365

00:18:13,029 --> 00:18:11,520

nope nope they pump the brakes on this

366

00:18:14,470 --> 00:18:13,039

so instead

367

00:18:16,390 --> 00:18:14,480

they will be

368

00:18:18,310 --> 00:18:16,400

chaperoned

369

00:18:20,230 --> 00:18:18,320

by an adult

370

00:18:21,270 --> 00:18:20,240

an experienced

371

00:18:22,549 --> 00:18:21,280

nasa

372

00:18:24,789 --> 00:18:22,559

professional

373

00:18:27,590 --> 00:18:24,799

new requirements from the agency would

374

00:18:28,390 --> 00:18:27,600

mandate that future space tourist

375

00:18:31,350 --> 00:18:28,400

right

376

00:18:35,830 --> 00:18:31,360

would be led by former astronaut uh

377

00:18:38,310 --> 00:18:35,840

former nasa astronauts an astronaut

378

00:18:41,510 --> 00:18:38,320

you like that hey isaac look at me look

379

00:18:44,150 --> 00:18:41,520

at me astronaut an astronaut you can

380

00:18:46,310 --> 00:18:44,160

use that you can use that on futurism

381

00:18:48,070 --> 00:18:46,320

an astronaut

382

00:18:50,150 --> 00:18:48,080

did you write that down

383

00:18:50,950 --> 00:18:50,160

okay he wrote that down all right very

384

00:18:53,830 --> 00:18:50,960

cool

385

00:18:56,549 --> 00:18:53,840

yeah nasa says that the new proposals

386

00:18:59,029 --> 00:18:56,559

are lessons learned now i don't know

387

00:19:02,390 --> 00:18:59,039

what happened in the first private

388

00:19:05,270 --> 00:19:02,400

astronaut mission to the iss last april

389

00:19:07,750 --> 00:19:05,280

um it was complicated i get to i get all

390

00:19:10,150 --> 00:19:07,760

that it was put together by axiom space

391

00:19:13,029 --> 00:19:10,160

but nasa says no more the crew included

392

00:19:14,950 --> 00:19:13,039

michael lopez alsiera a former nasa

393

00:19:18,549 --> 00:19:14,960

astronaut and current axiom space

394

00:19:20,150 --> 00:19:18,559

employee and three civilian crew members

395

00:19:21,909 --> 00:19:20,160

mistakes happened

396

00:19:23,029 --> 00:19:21,919

and they don't want this to go down

397

00:19:25,990 --> 00:19:23,039

anymore

398

00:19:28,710 --> 00:19:26,000

and each one of these crew members

399

00:19:32,630 --> 00:19:28,720

reportedly paid

400

00:19:34,310 --> 00:19:32,640

55 million dollars per ticket

401
00:19:36,150 --> 00:19:34,320
that's a lot of money i mean not ty

402
00:19:39,270 --> 00:19:36,160
isaac arthur he's got that big youtube

403
00:19:41,990 --> 00:19:39,280
channel huh you know that's 55 mil 55

404
00:19:43,590 --> 00:19:42,000
large but but that's a lot of bread man

405
00:19:46,070 --> 00:19:43,600
that's a lot of ducks

406
00:19:47,590 --> 00:19:46,080
quacking in the pond all right so nasa's

407
00:19:51,270 --> 00:19:47,600
put the brakes on that

408
00:19:53,190 --> 00:19:51,280
on this day in history

409
00:19:55,510 --> 00:19:53,200
1958

410
00:19:59,190 --> 00:19:55,520
the united states nuclear submarine

411
00:20:02,870 --> 00:19:59,200
nautilus dived at point barrow alaska

412
00:20:06,390 --> 00:20:02,880
and then traveled nearly 1 000 miles

413
00:20:09,190 --> 00:20:06,400

under the arctic ice cap to reach the

414

00:20:10,710 --> 00:20:09,200

top of the world and the geographic

415

00:20:13,590 --> 00:20:10,720

north pole

416

00:20:15,029 --> 00:20:13,600

on this day in 1958 now i know that

417

00:20:16,789 --> 00:20:15,039

you've thought about this i know that i

418

00:20:18,870 --> 00:20:16,799

have

419

00:20:20,789 --> 00:20:18,880

the thought of being in a submarine for

420

00:20:23,830 --> 00:20:20,799

two or three months with a bunch of

421

00:20:25,590 --> 00:20:23,840

dudes in a in a sealed tube

422

00:20:28,630 --> 00:20:25,600

it just doesn't sound like

423

00:20:29,669 --> 00:20:28,640

fun to me it sounds very claustrophobic

424

00:20:31,270 --> 00:20:29,679

and

425

00:20:32,789 --> 00:20:31,280

plus

426

00:20:35,190 --> 00:20:32,799

you know uh

427

00:20:37,750 --> 00:20:35,200

how are you gonna smoke cigars in a

428

00:20:39,270 --> 00:20:37,760

submarine do they have a cigar room

429

00:20:42,390 --> 00:20:39,280

right so how do you do that for three

430

00:20:44,390 --> 00:20:42,400

months no weed nothing right so you got

431

00:20:46,549 --> 00:20:44,400

that issue number one

432

00:20:50,310 --> 00:20:46,559

but number two

433

00:20:53,590 --> 00:20:50,320

the brainiac that thought of

434

00:20:55,350 --> 00:20:53,600

under the arctic ice for a thousand

435

00:20:57,830 --> 00:20:55,360

miles how do you know you're not gonna

436

00:20:59,350 --> 00:20:57,840

get stuck trapped frozen

437

00:21:02,710 --> 00:20:59,360

whatever how do they know it's a clean

438

00:21:05,270 --> 00:21:02,720

path how do they know this

439

00:21:07,909 --> 00:21:05,280

and and you're going to volunteer for

440

00:21:10,789 --> 00:21:07,919

that oh

441

00:21:11,990 --> 00:21:10,799

the crew didn't volunteer i just thought

442

00:21:13,750 --> 00:21:12,000

of that

443

00:21:18,070 --> 00:21:13,760

all right so that's how they got it done

444

00:21:21,350 --> 00:21:18,080

because i'd be like no no no

445

00:21:23,350 --> 00:21:21,360

thousand miles under the arctic ice

446

00:21:24,789 --> 00:21:23,360

it just doesn't sound like a good idea

447

00:21:27,830 --> 00:21:24,799

but they did it

448

00:21:31,750 --> 00:21:27,840

all the way back in 1958

449

00:21:34,070 --> 00:21:31,760

on this day fader fact all right now

450

00:21:38,870 --> 00:21:34,080

this is

451

00:21:40,870 --> 00:21:38,880

um that i know that i say this every

452

00:21:42,149 --> 00:21:40,880

night this is unbelievable this is

453

00:21:44,789 --> 00:21:42,159

something that

454

00:21:47,430 --> 00:21:44,799

uh has been vetted and you doubt that

455

00:21:49,350 --> 00:21:47,440

it's been vetted because it's too crazy

456

00:21:51,029 --> 00:21:49,360

you just think that i've made it up and

457

00:21:53,430 --> 00:21:51,039

that it's it's it's a joke and it's

458

00:21:55,750 --> 00:21:53,440

humor and and sometimes it is but

459

00:21:57,270 --> 00:21:55,760

they're always pretty unbelievable this

460

00:22:02,390 --> 00:21:57,280

one

461

00:22:04,630 --> 00:22:02,400

because it's crazy town and it's much

462

00:22:06,230 --> 00:22:04,640

more detailed than what i'm going to

463

00:22:07,270 --> 00:22:06,240

present here

464

00:22:08,950 --> 00:22:07,280

but

465

00:22:12,149 --> 00:22:08,960

fader fact

466

00:22:15,029 --> 00:22:12,159

in 1841

467

00:22:17,909 --> 00:22:15,039

france that's right

468

00:22:20,630 --> 00:22:17,919

almost broke off relations and they kind

469

00:22:24,310 --> 00:22:20,640

of did and they just rebuilt them but

470

00:22:27,350 --> 00:22:24,320

france almost broke off relations with

471

00:22:29,590 --> 00:22:27,360

the republic of texas

472

00:22:33,909 --> 00:22:29,600

in 1841

473

00:22:36,549 --> 00:22:33,919

they did this due to a hotel owners

474

00:22:37,909 --> 00:22:36,559

marauding pigs

475

00:22:41,270 --> 00:22:37,919

that's right

476
00:22:43,750 --> 00:22:41,280
those marauding pigs

477
00:22:46,310 --> 00:22:43,760
ate the french ambassador his name was

478
00:22:49,190 --> 00:22:46,320
dubois de salni

479
00:22:51,029 --> 00:22:49,200
the french ambassadors

480
00:22:53,270 --> 00:22:51,039
sheets

481
00:22:56,310 --> 00:22:53,280
his bed linens

482
00:22:59,430 --> 00:22:56,320
the marauding pigs

483
00:23:00,950 --> 00:22:59,440
ate his sheets

484
00:23:04,549 --> 00:23:00,960
that's right

485
00:23:09,230 --> 00:23:04,559
it is known and this is not a joke

486
00:23:11,190 --> 00:23:09,240
it is known as the great pig war of

487
00:23:13,029 --> 00:23:11,200
1841.

488
00:23:14,390 --> 00:23:13,039

it's not a joke

489

00:23:17,510 --> 00:23:14,400

look it up

490

00:23:19,350 --> 00:23:17,520

that is the craziest out of all the

491

00:23:21,950 --> 00:23:19,360

fader facts and i know what you're doing

492

00:23:23,590 --> 00:23:21,960

right now the great pig war

493

00:23:26,470 --> 00:23:23,600

1841

494

00:23:28,710 --> 00:23:26,480

search i know what you're doing

495

00:23:31,190 --> 00:23:28,720

it really happened

496

00:23:34,789 --> 00:23:31,200

they had to mend those fences man

497

00:23:36,710 --> 00:23:34,799

they had to mend those fences diplomacy

498

00:23:39,350 --> 00:23:36,720

had to step in tonight

499

00:23:41,830 --> 00:23:39,360

we welcome very special guest our good

500

00:23:44,710 --> 00:23:41,840

friend isaac arthur is back

501
00:23:48,230 --> 00:23:44,720
and and tonight you know sometimes i did

502
00:23:51,029 --> 00:23:48,240
a a special uh six weeks ago

503
00:23:53,590 --> 00:23:51,039
on time travel and everybody knows my

504
00:23:55,750 --> 00:23:53,600
interest in time travel we all are

505
00:23:58,470 --> 00:23:55,760
interested in time travel

506
00:23:59,830 --> 00:23:58,480
and but sometimes

507
00:24:02,870 --> 00:23:59,840
i need

508
00:24:04,950 --> 00:24:02,880
the scientific mind

509
00:24:07,830 --> 00:24:04,960
to bring me back to center

510
00:24:09,830 --> 00:24:07,840
to get me off of the fantasy right and

511
00:24:12,549 --> 00:24:09,840
just let me know how all of this is

512
00:24:14,710 --> 00:24:12,559
possible isaac arthur is here with us

513
00:24:16,549 --> 00:24:14,720

tonight we know

514

00:24:17,669 --> 00:24:16,559

that the math

515

00:24:19,750 --> 00:24:17,679

says

516

00:24:22,470 --> 00:24:19,760

time travel is possible

517

00:24:23,269 --> 00:24:22,480

it's it's it's it's right there this is

518

00:24:26,710 --> 00:24:23,279

not

519

00:24:28,230 --> 00:24:26,720

hg wells in 1895.

520

00:24:29,669 --> 00:24:28,240

all right which is still the best time

521

00:24:34,230 --> 00:24:29,679

travel story ever

522

00:24:36,710 --> 00:24:34,240

but it's not that time travel is real

523

00:24:39,430 --> 00:24:36,720

and tonight isaac arthur is here with us

524

00:24:41,990 --> 00:24:39,440

we'll be talking about all of that

525

00:24:43,990 --> 00:24:42,000

and of course how

526

00:24:47,430 --> 00:24:44,000

how he's going to pay for the next

527

00:24:49,269 --> 00:24:47,440

astronaut mission as an astronaut for 55

528

00:24:50,950 --> 00:24:49,279

million dollars there you go we're going

529

00:24:52,950 --> 00:24:50,960

to do all of that and much more tonight

530

00:24:54,789 --> 00:24:52,960

with isaac arthur tomorrow night is

531

00:24:56,470 --> 00:24:54,799

another fader night with open lines all

532

00:24:57,269 --> 00:24:56,480

night long can you tell i'm in a great

533

00:24:59,110 --> 00:24:57,279

mood

534

00:25:01,750 --> 00:24:59,120

i was out in the middle of the desert

535

00:25:03,669 --> 00:25:01,760

today in the hot sun

536

00:25:05,750 --> 00:25:03,679

no air conditioning you saw the video

537

00:25:08,310 --> 00:25:05,760

that i posted today

538

00:25:10,470 --> 00:25:08,320

um it was incredible the the set of the

539

00:25:13,510 --> 00:25:10,480

movie set the the all of that it was

540

00:25:16,470 --> 00:25:13,520

absolutely insane but we we shot

541

00:25:18,070 --> 00:25:16,480

in an abandoned home

542

00:25:20,070 --> 00:25:18,080

uh cabin

543

00:25:22,870 --> 00:25:20,080

thing

544

00:25:25,190 --> 00:25:22,880

so apocalyptic it was so awesome um and

545

00:25:27,190 --> 00:25:25,200

there's no air there was no power there

546

00:25:30,630 --> 00:25:27,200

uh it literally

547

00:25:32,789 --> 00:25:30,640

in the middle of the desert i shot um i

548

00:25:35,750 --> 00:25:32,799

shot a video so check this out man i got

549

00:25:38,390 --> 00:25:35,760

it i got to go i can't be goofing around

550

00:25:39,669 --> 00:25:38,400

like this but i shot a video

551
00:25:42,549 --> 00:25:39,679
of me

552
00:25:45,269 --> 00:25:42,559
driving through the desert

553
00:25:47,669 --> 00:25:45,279
uh to get to can you see that can you

554
00:25:50,470 --> 00:25:47,679
see that that's me driving through the

555
00:25:51,590 --> 00:25:50,480
desert this is just to get to the set

556
00:25:53,830 --> 00:25:51,600
look at this

557
00:25:55,590 --> 00:25:53,840
and this took like 20 minutes

558
00:26:02,870 --> 00:25:55,600
open desert

559
00:26:08,149 --> 00:26:02,880
no street signs no directions

560
00:26:09,430 --> 00:26:08,159
no google maps no gps oh no

561
00:26:11,190 --> 00:26:09,440
oh no

562
00:26:14,630 --> 00:26:11,200
and uh it's good thing i had a case of

563
00:26:17,269 --> 00:26:14,640

water and uh some fruit snacks

564

00:26:18,230 --> 00:26:17,279

um in the back just in case i i brought

565

00:26:23,269 --> 00:26:18,240

my

566

00:26:25,830 --> 00:26:23,279

all of that in the jeep just in case

567

00:26:27,350 --> 00:26:25,840

that's what i did today and it was so

568

00:26:30,230 --> 00:26:27,360

much fun

569

00:26:32,230 --> 00:26:30,240

all right rivermoonwellness.com

570

00:26:35,029 --> 00:26:32,240

that's where you get your fade to black

571

00:26:37,110 --> 00:26:35,039

blend the best coffee in the world click

572

00:26:39,830 --> 00:26:37,120

on river moon wellness below the promo

573

00:26:42,149 --> 00:26:39,840

code f2b blend will get you 15

574

00:26:44,070 --> 00:26:42,159

off of your order today if you order

575

00:26:46,230 --> 00:26:44,080

from the website if you go over to

576
00:26:48,950 --> 00:26:46,240
amazon from the amazon store which is

577
00:26:51,269 --> 00:26:48,960
fine you're going to get free shipping

578
00:26:53,590 --> 00:26:51,279
if you're a prime member there you go

579
00:26:54,789 --> 00:26:53,600
you can't beat it those is for the best

580
00:26:59,830 --> 00:26:54,799
coffee

581
00:27:03,190 --> 00:27:01,909
absolutely incredible

582
00:27:05,190 --> 00:27:03,200
get yours click on the link

583
00:27:07,909 --> 00:27:05,200
rivermoonwellness.com

584
00:27:09,830 --> 00:27:07,919
now before uh i bring in isaac

585
00:27:12,070 --> 00:27:09,840
um i i just want to say this for a

586
00:27:13,669 --> 00:27:12,080
couple of minutes um

587
00:27:16,470 --> 00:27:13,679
that's

588
00:27:20,710 --> 00:27:19,029

a member of the media

589

00:27:25,669 --> 00:27:20,720

all right

590

00:27:27,669 --> 00:27:25,679

and uh tv shows radio film

591

00:27:30,470 --> 00:27:27,679

every aspect from whatever on the

592

00:27:31,990 --> 00:27:30,480

internet it's all over the place but

593

00:27:36,070 --> 00:27:32,000

but uh

594

00:27:38,950 --> 00:27:36,080

over the last 10 years um especially

595

00:27:42,149 --> 00:27:38,960

uh when we just look at numbers

596

00:27:44,549 --> 00:27:42,159

i'm i'm speaking to literally

597

00:27:46,870 --> 00:27:44,559

millions of people

598

00:27:50,549 --> 00:27:46,880

and then you add that up into a week and

599

00:27:52,149 --> 00:27:50,559

you just calculate these crazy numbers

600

00:27:54,149 --> 00:27:52,159

crazy numbers

601
00:27:56,950 --> 00:27:54,159
i'm a member of the media

602
00:28:01,669 --> 00:27:56,960
and we have been talking about

603
00:28:03,190 --> 00:28:01,679
ufos conspiracy et contact

604
00:28:05,750 --> 00:28:03,200
time travel

605
00:28:07,190 --> 00:28:05,760
these different aspects of of our little

606
00:28:09,110 --> 00:28:07,200
community

607
00:28:10,389 --> 00:28:09,120
for a very long time

608
00:28:11,510 --> 00:28:10,399
and

609
00:28:14,630 --> 00:28:11,520
for

610
00:28:15,750 --> 00:28:14,640
a big chunk of that i really felt

611
00:28:17,990 --> 00:28:15,760
like

612
00:28:20,149 --> 00:28:18,000
i was on my own

613
00:28:23,990 --> 00:28:20,159

in that i couldn't get other members of

614

00:28:25,750 --> 00:28:24,000

the media to to jump on board it just i

615

00:28:26,950 --> 00:28:25,760

couldn't i couldn't make it happen i

616

00:28:28,630 --> 00:28:26,960

tried

617

00:28:30,070 --> 00:28:28,640

there's a few other radio hosts out

618

00:28:31,510 --> 00:28:30,080

there and there's some tv shows and

619

00:28:33,350 --> 00:28:31,520

things like ancient aliens but that's

620

00:28:35,590 --> 00:28:33,360

not what i'm referring to

621

00:28:37,590 --> 00:28:35,600

just talking about the talking heads

622

00:28:39,830 --> 00:28:37,600

and and those that

623

00:28:42,149 --> 00:28:39,840

um may or may not have an audience as

624

00:28:44,149 --> 00:28:42,159

big as mine that that doesn't matter but

625

00:28:47,190 --> 00:28:44,159

if it's a team effort if we all get on

626
00:28:49,430 --> 00:28:47,200
board you know and i just felt like

627
00:28:52,070 --> 00:28:49,440
i was i was on my own

628
00:28:55,269 --> 00:28:52,080
and which you know what in in the end i

629
00:28:56,470 --> 00:28:55,279
accepted it and it's fine i i realized

630
00:28:57,350 --> 00:28:56,480
early on

631
00:29:00,149 --> 00:28:57,360
that

632
00:29:01,430 --> 00:29:00,159
they were not going to

633
00:29:04,630 --> 00:29:01,440
assist

634
00:29:06,470 --> 00:29:04,640
jump on board or consider that's it they

635
00:29:09,110 --> 00:29:06,480
they just weren't going to do it and

636
00:29:11,350 --> 00:29:09,120
then the over the last four going on

637
00:29:12,870 --> 00:29:11,360
five years since 2017

638
00:29:15,510 --> 00:29:12,880

the media

639

00:29:19,190 --> 00:29:15,520

has jumped on board not like the way

640

00:29:21,909 --> 00:29:19,200

that i do it and to that extent but they

641

00:29:23,669 --> 00:29:21,919

they have and certainly more so than any

642

00:29:27,430 --> 00:29:23,679

other point in history

643

00:29:30,070 --> 00:29:27,440

did they do their job right and i have

644

00:29:33,029 --> 00:29:30,080

i've thought about this a lot and over

645

00:29:35,350 --> 00:29:33,039

the last uh six months or so i've really

646

00:29:37,750 --> 00:29:35,360

been thinking about it where they were

647

00:29:39,990 --> 00:29:37,760

given an opportunity

648

00:29:43,029 --> 00:29:40,000

any journalist out there any talking

649

00:29:44,630 --> 00:29:43,039

head any news director any producer of

650

00:29:47,190 --> 00:29:44,640

any of these shows

651
00:29:49,350 --> 00:29:47,200
both on television and radio

652
00:29:52,310 --> 00:29:49,360
if if they just

653
00:29:54,310 --> 00:29:52,320
reached out they would have all of the

654
00:29:56,149 --> 00:29:54,320
coverage and news and information that

655
00:29:58,149 --> 00:29:56,159
they can handle

656
00:30:00,389 --> 00:29:58,159
but nobody wants to do it

657
00:30:03,190 --> 00:30:00,399
they just want for these little tidbits

658
00:30:03,909 --> 00:30:03,200
to come along and they'll cover those

659
00:30:05,830 --> 00:30:03,919
but

660
00:30:07,669 --> 00:30:05,840
they won't do it and they were given an

661
00:30:08,470 --> 00:30:07,679
opportunity they know

662
00:30:11,029 --> 00:30:08,480
that

663
00:30:13,669 --> 00:30:11,039

the country and the world wants to hear

664

00:30:16,549 --> 00:30:13,679

about this subject they want the news

665

00:30:18,310 --> 00:30:16,559

they know this the the amount of clicks

666

00:30:20,310 --> 00:30:18,320

and views that they have gotten on the

667

00:30:23,590 --> 00:30:20,320

coverage over the last five years should

668

00:30:26,710 --> 00:30:23,600

demonstrate that to them and i can't

669

00:30:29,590 --> 00:30:26,720

figure out why

670

00:30:32,070 --> 00:30:29,600

uh it doesn't make any sense but as a

671

00:30:35,029 --> 00:30:32,080

member of the media i will never give up

672

00:30:37,190 --> 00:30:35,039

i will never give up and today on set

673

00:30:39,510 --> 00:30:37,200

and i was just sitting there thinking

674

00:30:42,789 --> 00:30:39,520

about this once again

675

00:30:43,830 --> 00:30:42,799

where are all of my media brothers and

676
00:30:45,669 --> 00:30:43,840
sisters

677
00:30:47,830 --> 00:30:45,679
where are they

678
00:30:49,990 --> 00:30:47,840
why is it that i've got to be out here

679
00:30:52,310 --> 00:30:50,000
on my own it doesn't make any sense and

680
00:30:54,389 --> 00:30:52,320
others you know but in our community

681
00:30:55,990 --> 00:30:54,399
but but that's it

682
00:30:57,909 --> 00:30:56,000
where are they

683
00:31:00,389 --> 00:30:57,919
this is fade to black i am your host

684
00:31:02,149 --> 00:31:00,399
jimmy church that's why i thank people

685
00:31:07,350 --> 00:31:02,159
like isaac arthur

686
00:31:11,350 --> 00:31:07,360
isaac has championed these subjects and

687
00:31:13,830 --> 00:31:11,360
has has built a very very respectable

688
00:31:16,389 --> 00:31:13,840

career absolutely incredible so tonight

689

00:31:19,269 --> 00:31:16,399

our guest is isaac arthur we are talking

690

00:31:21,990 --> 00:31:19,279

about time travel all of this going down

691

00:31:23,990 --> 00:31:22,000

on the on x and game changer networks

692

00:31:25,269 --> 00:31:24,000

this is fade to black i'm your host

693

00:31:26,710 --> 00:31:25,279

jimmy church

694

00:31:37,660 --> 00:31:26,720

i'll be right back after this short

695

00:32:10,070 --> 00:31:43,830

[Music]

696

00:32:14,470 --> 00:32:12,230

this is nicole church daughter of you

697

00:32:15,389 --> 00:32:14,480

know who and you're listening to fade to

698

00:32:17,029 --> 00:32:15,399

black on

699

00:32:19,990 --> 00:32:17,039

jimmychurchradio.com and the game

700

00:32:23,590 --> 00:32:22,070

you're listening to jimmy church and

701
00:32:30,070 --> 00:32:23,600
fade to black

702
00:32:36,549 --> 00:32:32,389
you're listening to jimmy church fade to

703
00:32:39,790 --> 00:32:38,710
fade to black will now pause for alien

704
00:32:45,110 --> 00:32:39,800
identification

705
00:32:49,909 --> 00:32:47,269
when you take the beans from central

706
00:32:52,310 --> 00:32:49,919
america with dashes of indonesian and

707
00:32:55,430 --> 00:32:52,320
african mixed in and then roasted to the

708
00:32:57,990 --> 00:32:55,440
dark side of fade to black you create

709
00:33:00,950 --> 00:32:58,000
the ultimate brew of fringe

710
00:33:04,230 --> 00:33:00,960
introducing the fade to black blend from

711
00:33:07,029 --> 00:33:04,240
river moon coffee yes river moon's

712
00:33:10,950 --> 00:33:07,039
darkest customized roast was created for

713
00:33:13,750 --> 00:33:10,960

the love of fade to black the alchemy of

714

00:33:17,029 --> 00:33:13,760

masterful roasting and smoking the beans

715

00:33:20,870 --> 00:33:17,039

is in every sip of this full-bodied dark

716

00:33:22,549 --> 00:33:20,880

java i need my coffee doc deep with

717

00:33:25,509 --> 00:33:22,559

distinct bittersweet chocolate

718

00:33:27,990 --> 00:33:25,519

highlights just like the bunker leaning

719

00:33:30,710 --> 00:33:28,000

further into the darkness of the roast

720

00:33:33,310 --> 00:33:30,720

is fade to black blend from river moon

721

00:33:35,350 --> 00:33:33,320

coffee just click on the banner at

722

00:33:39,110 --> 00:33:35,360

jimmychurchradio.com and use the promo

723

00:33:40,950 --> 00:33:39,120

code f2b blend for 15 off of your order

724

00:33:43,669 --> 00:33:40,960

today

725

00:33:46,389 --> 00:33:43,679

this is the only way

726
00:33:48,789 --> 00:33:46,399
this is

727
00:33:50,549 --> 00:33:48,799
make contact

728
00:33:53,350 --> 00:33:50,559
this is jimmy church of fade to black

729
00:33:55,750 --> 00:33:53,360
and you can get our podcast for just two

730
00:33:58,070 --> 00:33:55,760
dollars per month all you have to do is

731
00:34:00,950 --> 00:33:58,080
click on the podcast banner over at

732
00:34:03,029 --> 00:34:00,960
jimmychurchradio.com

733
00:34:06,149 --> 00:34:03,039
hello fader knots jimmy church here

734
00:34:08,389 --> 00:34:06,159
you've seen me with my thunderstorm now

735
00:34:10,629 --> 00:34:08,399
you can purify the air in your home and

736
00:34:12,950 --> 00:34:10,639
get healthy clean fresh smelling air and

737
00:34:14,950 --> 00:34:12,960
eliminate odors just like i do right

738
00:34:17,430 --> 00:34:14,960

here in the bunker the eden pier

739

00:34:19,990 --> 00:34:17,440

thunderstorm uses oxy technology that

740

00:34:22,310 --> 00:34:20,000

naturally sends out o3 molecules into

741

00:34:24,629 --> 00:34:22,320

the air which seek out odors and air

742

00:34:27,190 --> 00:34:24,639

pollutants in your home and destroys

743

00:34:29,669 --> 00:34:27,200

them it's called a thunderstorm because

744

00:34:32,149 --> 00:34:29,679

it purifies the air just like after a

745

00:34:35,030 --> 00:34:32,159

thunderstorm and right now you can save

746

00:34:38,069 --> 00:34:35,040

200 on an eden pier thunderstorm three

747

00:34:40,389 --> 00:34:38,079

pack for whole home protection with this

748

00:34:42,310 --> 00:34:40,399

special offer you're getting three units

749

00:34:43,669 --> 00:34:42,320

for under two hundred dollars

750

00:34:45,829 --> 00:34:43,679

seriously

751

00:34:48,389 --> 00:34:45,839

go to edenpuredeals.com

752

00:34:50,950 --> 00:34:48,399

and use fader three

753

00:34:53,669 --> 00:34:50,960

shipping is free and it's easy just

754

00:34:54,470 --> 00:34:53,679

scroll down you'll see my name right

755

00:34:57,589 --> 00:34:54,480

there

756

00:35:03,750 --> 00:34:57,599

jimmy church click on it and get your

757

00:35:06,950 --> 00:35:05,030

do you have an interest in the

758

00:35:09,030 --> 00:35:06,960

paranormal that you'll love

759

00:35:11,510 --> 00:35:09,040

thenxnetwork.com

760

00:35:14,150 --> 00:35:11,520

the x is your streaming audio and video

761

00:35:17,910 --> 00:35:14,160

for everything supernatural strange and

762

00:35:20,150 --> 00:35:17,920

mysterious like ufos bigfoot ghosts and

763

00:35:23,030 --> 00:35:20,160

so much more from hosts like jimmy

764

00:35:25,390 --> 00:35:23,040

church whitley strieber micah hanks and

765

00:35:27,670 --> 00:35:25,400

christina gomez visit the

766

00:35:29,670 --> 00:35:27,680

unexnetwork.com show page for a complete

767

00:35:32,150 --> 00:35:29,680

list of all the paranormal programs

768

00:35:35,430 --> 00:35:32,160

you'll find on the axe be sure to follow

769

00:35:38,230 --> 00:35:35,440

us on twitter for updates at kunxdb

770

00:35:40,950 --> 00:35:38,240

follow our facebook group on x network

771

00:35:44,550 --> 00:35:40,960

find the podcast on spotify iheart

772

00:35:45,349 --> 00:35:44,560

audible and apple podcast it's time it's

773

00:35:48,950 --> 00:35:45,359

new

774

00:35:51,109 --> 00:35:48,960

it's the x x

775

00:35:53,829 --> 00:35:51,119

right now the world couldn't be more

776
00:35:56,710 --> 00:35:53,839
chaotic history shows us what gold does

777
00:35:59,190 --> 00:35:56,720
when the world goes crazy it goes up in

778
00:36:01,670 --> 00:35:59,200
value right now we're in unprecedented

779
00:36:04,710 --> 00:36:01,680
times the pandemic the war in ukraine

780
00:36:06,950 --> 00:36:04,720
the devaluation of the us dollar gold

781
00:36:08,870 --> 00:36:06,960
and other precious metals are a defense

782
00:36:11,430 --> 00:36:08,880
measure against the hyperinflation

783
00:36:13,750 --> 00:36:11,440
that's happening right now so what can

784
00:36:15,829 --> 00:36:13,760
you do to protect yourself call my

785
00:36:18,069 --> 00:36:15,839
friend allen johnson at united gold

786
00:36:20,150 --> 00:36:18,079
group he's dedicated to helping people

787
00:36:22,550 --> 00:36:20,160
secure their retirement income he'll

788
00:36:24,710 --> 00:36:22,560

help you with gold with silver and other

789

00:36:27,990 --> 00:36:24,720

precious metals and show you how to set

790

00:36:30,470 --> 00:36:28,000

up your own self-directed ira safe and

791

00:36:32,550 --> 00:36:30,480

secure united gold group makes gold

792

00:36:35,190 --> 00:36:32,560

ownership easy and affordable there

793

00:36:37,270 --> 00:36:35,200

couldn't be a better time so call now

794

00:36:39,990 --> 00:36:37,280

and get a silver american eagle proof

795

00:36:43,349 --> 00:36:40,000

set with a qualified ira call

796

00:36:43,359 --> 00:36:47,270

that's 800-753-8534

797

00:36:54,310 --> 00:36:50,310

or visit unitedgoldgroup.com

798

00:36:59,430 --> 00:36:54,320

reach out to my friend alan johnson

799

00:37:03,190 --> 00:37:01,750

fade to black

800

00:37:05,829 --> 00:37:03,200

is not

801
00:37:09,990 --> 00:37:05,839
your father's radio show

802
00:37:11,990 --> 00:37:10,000
on the game changer radio network

803
00:37:13,270 --> 00:37:12,000
hi this is rob reiner from anvil and

804
00:37:18,920 --> 00:37:13,280
you're listening to jimmy

805
00:37:18,930 --> 00:37:39,829
[Music]

806
00:37:44,150 --> 00:37:41,910
all right welcome back fade to black i

807
00:37:46,230 --> 00:37:44,160
am your host jimmy church tonight

808
00:37:47,829 --> 00:37:46,240
it's time travel we've got isaac arthur

809
00:37:49,990 --> 00:37:47,839
here with us

810
00:37:52,550 --> 00:37:50,000
and isaac of course is the host of

811
00:37:53,670 --> 00:37:52,560
science and futurism with isaac arthur

812
00:37:54,750 --> 00:37:53,680
on youtube

813
00:37:58,950 --> 00:37:54,760

with

814

00:38:01,589 --> 00:37:58,960

700 000 subscribers covering topics like

815

00:38:04,870 --> 00:38:01,599

colonizing the solar system interstellar

816

00:38:06,310 --> 00:38:04,880

travel the fermi paradox artificial

817

00:38:08,950 --> 00:38:06,320

intelligence and other topics

818

00:38:12,950 --> 00:38:08,960

representing possible future paths

819

00:38:15,109 --> 00:38:12,960

and challenges for e.t oh humanity

820

00:38:17,270 --> 00:38:15,119

i think i think he meant to

821

00:38:20,230 --> 00:38:17,280

he he wants to say e.t

822

00:38:23,270 --> 00:38:20,240

one day one day one day one day i need

823

00:38:24,630 --> 00:38:23,280

to get isaac over the edge and i've got

824

00:38:26,470 --> 00:38:24,640

a plan

825

00:38:29,030 --> 00:38:26,480

and i'm gonna make it happen he received

826

00:38:31,109 --> 00:38:29,040

his degree in physics from kent state

827

00:38:33,910 --> 00:38:31,119

university graduating top of his class

828

00:38:35,829 --> 00:38:33,920

at the age of 20 and he remained there

829

00:38:40,390 --> 00:38:35,839

for graduate studies before joining the

830

00:38:43,190 --> 00:38:40,400

us army serving in iraq he also worked

831

00:38:45,990 --> 00:38:43,200

note this as a civilian researcher at

832

00:38:48,310 --> 00:38:46,000

the air force institute of technology in

833

00:38:51,069 --> 00:38:48,320

dayton ohio

834

00:38:53,589 --> 00:38:51,079

where they've got the bodies buried

835

00:38:55,670 --> 00:38:53,599

isaacarthur.net is the website and i

836

00:38:57,109 --> 00:38:55,680

would like to welcome back to fade to

837

00:39:00,790 --> 00:38:57,119

black and you know

838

00:39:03,510 --> 00:39:00,800

it's it's i have fun with this because i

839

00:39:05,349 --> 00:39:03,520

have such mad respect uh for you isaac

840

00:39:07,349 --> 00:39:05,359

welcome back to the show how are you my

841

00:39:09,990 --> 00:39:07,359

friend doing great jimmy so glad to be

842

00:39:11,430 --> 00:39:10,000

back on man man man

843

00:39:13,670 --> 00:39:11,440

you know what

844

00:39:16,069 --> 00:39:13,680

um before tonight we're discussing

845

00:39:17,670 --> 00:39:16,079

breakfast cereals with isaac arthur but

846

00:39:23,510 --> 00:39:17,680

here's the thing

847

00:39:25,589 --> 00:39:23,520

uh we all have those fond warm fuzzy

848

00:39:28,550 --> 00:39:25,599

memories christmas when you're five

849

00:39:29,589 --> 00:39:28,560

right and and those things and when you

850

00:39:33,670 --> 00:39:29,599

need

851

00:39:37,270 --> 00:39:33,680

that comfortable place that zone

852

00:39:39,510 --> 00:39:37,280

that's where you go not me oh no

853

00:39:42,390 --> 00:39:39,520

no you know what i do

854

00:39:45,030 --> 00:39:42,400

i go back to isaac arthur saying

855

00:39:46,950 --> 00:39:45,040

the fermi paradox great filter number

856

00:39:49,910 --> 00:39:46,960

560.

857

00:39:51,750 --> 00:39:49,920

and when andy and you get to that point

858

00:39:55,349 --> 00:39:51,760

where you at the fermi paradox when

859

00:39:59,670 --> 00:39:55,359

you're you're approaching filter 1000

860

00:40:01,430 --> 00:39:59,680

that's my warm fuzzy place isaac

861

00:40:03,510 --> 00:40:01,440

you know that

862

00:40:05,510 --> 00:40:03,520

it's always a fun topic and i'm amazed

863

00:40:07,510 --> 00:40:05,520

that to this day we still keep finding

864

00:40:09,190 --> 00:40:07,520

other filters or other ways that might

865

00:40:11,430 --> 00:40:09,200

be getting around those filters it's

866

00:40:12,950 --> 00:40:11,440

just it would be so nice if we could

867

00:40:14,630 --> 00:40:12,960

actually get some additional data from

868

00:40:17,109 --> 00:40:14,640

help beyond this planet to help us

869

00:40:18,950 --> 00:40:17,119

narrow some of those down a bit more so

870

00:40:20,950 --> 00:40:18,960

it's right around the corner my friend

871

00:40:22,710 --> 00:40:20,960

you know it you know it there is a lot

872

00:40:24,870 --> 00:40:22,720

of action going on

873

00:40:26,950 --> 00:40:24,880

in the world of science and astrophysics

874

00:40:27,910 --> 00:40:26,960

and physics and uh it's a very exciting

875

00:40:30,470 --> 00:40:27,920

time

876

00:40:32,470 --> 00:40:30,480

and uh it seems to be like a snowball

877

00:40:34,150 --> 00:40:32,480

right it's it's just getting bigger and

878

00:40:35,990 --> 00:40:34,160

it's out of control

879

00:40:38,950 --> 00:40:36,000

and we're at the bottom of the hill you

880

00:40:40,870 --> 00:40:38,960

know and here it comes uh and it i think

881

00:40:43,190 --> 00:40:40,880

it's gonna hit us uh from multiple

882

00:40:44,470 --> 00:40:43,200

fronts but before we get started

883

00:40:46,630 --> 00:40:44,480

i wasn't kidding

884

00:40:49,430 --> 00:40:46,640

about the breakfast cereals thing so i

885

00:40:50,870 --> 00:40:49,440

just you know somebody just tweets out

886

00:40:53,109 --> 00:40:50,880

uh

887

00:40:55,670 --> 00:40:53,119

you know a breakfast cereal box i lose

888

00:40:57,829 --> 00:40:55,680

my mind and the next thing you know

889

00:41:01,109 --> 00:40:57,839

chat room twitter everything is all

890

00:41:02,790 --> 00:41:01,119

about cereals people love their cereal

891

00:41:05,589 --> 00:41:02,800

whatever it is

892

00:41:06,390 --> 00:41:05,599

what's yours what's your go-to

893

00:41:09,589 --> 00:41:06,400

uh

894

00:41:11,990 --> 00:41:09,599

life cereal and raisin bran usually yeah

895

00:41:14,309 --> 00:41:12,000

i can't do peanut butter anymore so yeah

896

00:41:15,190 --> 00:41:14,319

that's right right hey let me tell you

897

00:41:19,030 --> 00:41:15,200

something

898

00:41:21,910 --> 00:41:19,040

raisin bran is is a good day

899

00:41:23,750 --> 00:41:21,920

life cinnamon life you know what and i

900

00:41:26,069 --> 00:41:23,760

like them both the same it's equal it

901
00:41:27,510 --> 00:41:26,079
doesn't matter i can go down either

902
00:41:29,270 --> 00:41:27,520
either path there

903
00:41:31,510 --> 00:41:29,280
but life and cinnamon i'm right i'm

904
00:41:33,030 --> 00:41:31,520
right there with you man good choices

905
00:41:34,630 --> 00:41:33,040
very impressive

906
00:41:36,309 --> 00:41:34,640
always more of a cereal in the evenings

907
00:41:39,829 --> 00:41:36,319
person than the power breakfast in the

908
00:41:42,069 --> 00:41:39,839
mornings get you going that's it

909
00:41:44,710 --> 00:41:42,079
you got to balance life out you got to

910
00:41:46,309 --> 00:41:44,720
balance life out it's part of the the

911
00:41:53,190 --> 00:41:46,319
food pyramid

912
00:41:56,230 --> 00:41:53,200
um isaac uh here's the thing

913
00:41:57,589 --> 00:41:56,240

when you have uh done as many shows as

914

00:42:01,349 --> 00:41:57,599

you have

915

00:42:05,109 --> 00:42:01,359

and you are exposed to

916

00:42:06,309 --> 00:42:05,119

uh different topics that uh it's very

917

00:42:09,190 --> 00:42:06,319

easy

918

00:42:11,910 --> 00:42:09,200

in in your world because that's a spider

919

00:42:14,950 --> 00:42:11,920

web you're off on one little thing

920

00:42:17,670 --> 00:42:14,960

whether it's you know a colony you know

921

00:42:19,109 --> 00:42:17,680

super ships out heading that just that

922

00:42:21,270 --> 00:42:19,119

discussion right there gives you a

923

00:42:24,150 --> 00:42:21,280

hundred and fifty topics just on that

924

00:42:25,670 --> 00:42:24,160

right it just you can go on forever

925

00:42:27,030 --> 00:42:25,680

um

926

00:42:29,109 --> 00:42:27,040

what up for episodes like we're gonna

927

00:42:31,270 --> 00:42:29,119

run out of materials like well no i do a

928

00:42:33,829 --> 00:42:31,280

show on futurism so probably not there's

929

00:42:36,470 --> 00:42:33,839

always more of it ever ever ever and you

930

00:42:38,069 --> 00:42:36,480

can do an entire entire career just talk

931

00:42:40,630 --> 00:42:38,079

about one little piece of history or one

932

00:42:42,870 --> 00:42:40,640

little piece of award for years we have

933

00:42:46,069 --> 00:42:42,880

everything in all of time and the

934

00:42:48,950 --> 00:42:46,079

universe to talk about so

935

00:42:50,870 --> 00:42:48,960

you did a run this was uh a few years

936

00:42:52,309 --> 00:42:50,880

ago and i i

937

00:42:56,230 --> 00:42:52,319

this is how

938

00:42:59,430 --> 00:42:56,240

i am about your stuff

939

00:43:00,470 --> 00:42:59,440

you did a series

940

00:43:02,630 --> 00:43:00,480

of

941

00:43:03,670 --> 00:43:02,640

uh colonizing

942

00:43:06,230 --> 00:43:03,680

uh

943

00:43:09,270 --> 00:43:06,240

our planets and and the moon just here

944

00:43:10,069 --> 00:43:09,280

in our solar system right yeah and

945

00:43:11,670 --> 00:43:10,079

that

946

00:43:13,670 --> 00:43:11,680

on the surface

947

00:43:16,230 --> 00:43:13,680

that sounds like the most boring and

948

00:43:16,950 --> 00:43:16,240

dumbest idea ever

949

00:43:19,910 --> 00:43:16,960

it

950

00:43:21,910 --> 00:43:19,920

does right man you had me

951

00:43:24,230 --> 00:43:21,920

i'm just like and and

952

00:43:27,349 --> 00:43:24,240

and so how would you how would you how

953

00:43:29,670 --> 00:43:27,359

would you call is it possible you know

954

00:43:32,230 --> 00:43:29,680

mercury oh yeah sure we can we can get

955

00:43:33,670 --> 00:43:32,240

that done and this is how we you do it

956

00:43:35,990 --> 00:43:33,680

and um

957

00:43:37,349 --> 00:43:36,000

it's it's that's the point that i'm

958

00:43:38,150 --> 00:43:37,359

making here

959

00:43:41,270 --> 00:43:38,160

that

960

00:43:43,910 --> 00:43:41,280

these whatever the subject is there is

961

00:43:45,510 --> 00:43:43,920

such an in-depth discussion

962

00:43:48,470 --> 00:43:45,520

to be had there

963

00:43:49,829 --> 00:43:48,480

and and that series of colonizing our

964

00:43:52,069 --> 00:43:49,839

solar system

965

00:43:54,470 --> 00:43:52,079

was amazing

966

00:43:55,589 --> 00:43:54,480

and it's just one little sliver of an

967

00:43:57,990 --> 00:43:55,599

idea

968

00:44:00,309 --> 00:43:58,000

of of the future it's it's absolutely

969

00:44:01,910 --> 00:44:00,319

incredible so on to that end

970

00:44:04,069 --> 00:44:01,920

enough of the accolades okay the

971

00:44:06,550 --> 00:44:04,079

bromance is over let's get started

972

00:44:09,670 --> 00:44:06,560

yeah yeah it was fun raisin bran

973

00:44:10,870 --> 00:44:09,680

but but here's the thing

974

00:44:14,870 --> 00:44:10,880

the

975

00:44:17,430 --> 00:44:14,880

science fiction

976

00:44:18,550 --> 00:44:17,440

the world of gaming

977

00:44:20,470 --> 00:44:18,560

uh

978

00:44:23,510 --> 00:44:20,480

science fiction in the in the past and

979

00:44:27,750 --> 00:44:23,520

the deep past we went through romantic

980

00:44:29,270 --> 00:44:27,760

periods of space exploration but once we

981

00:44:32,390 --> 00:44:29,280

got to the moon

982

00:44:34,870 --> 00:44:32,400

there's not much to fantasize

983

00:44:37,270 --> 00:44:34,880

you know about you can expand on it

984

00:44:40,069 --> 00:44:37,280

but the authors and the writers and the

985

00:44:43,670 --> 00:44:40,079

creators they've got to move on to the

986

00:44:45,670 --> 00:44:43,680

next fantasy right what is it and and i

987

00:44:49,589 --> 00:44:45,680

think that there's two

988

00:44:52,390 --> 00:44:49,599

subjects that are are the most fun

989

00:44:54,550 --> 00:44:52,400

because we haven't tackled them yet

990

00:44:56,390 --> 00:44:54,560

the multiverse

991

00:44:59,510 --> 00:44:56,400

and time travel

992

00:45:01,349 --> 00:44:59,520

and that's that and that the majority of

993

00:45:03,670 --> 00:45:01,359

the movies and the books and the things

994

00:45:07,030 --> 00:45:03,680

and the games and stuff that this is

995

00:45:09,109 --> 00:45:07,040

what they deal with because we haven't

996

00:45:11,109 --> 00:45:09,119

well officially that we know of we

997

00:45:14,790 --> 00:45:11,119

haven't tackled it yet

998

00:45:18,710 --> 00:45:14,800

and what is it about uh time travel

999

00:45:19,430 --> 00:45:18,720

that is so freaking romantic it is such

1000

00:46:16,790 --> 00:45:19,440

a

1001
00:46:18,710 --> 00:46:16,800
if

1002
00:46:21,190 --> 00:46:18,720
do you do you find that your audience

1003
00:46:23,510 --> 00:46:21,200
does that too as well you just you say

1004
00:46:24,790 --> 00:46:23,520
the word time travel and right everybody

1005
00:46:26,390 --> 00:46:24,800
pops

1006
00:46:27,430 --> 00:46:26,400
to attention

1007
00:46:29,349 --> 00:46:27,440
and

1008
00:46:31,109 --> 00:46:29,359
you know so if you mention

1009
00:46:33,349 --> 00:46:31,119
you know next week we're going to we're

1010
00:46:34,230 --> 00:46:33,359
going to start a series on time travel

1011
00:46:37,109 --> 00:46:34,240
right

1012
00:46:38,870 --> 00:46:37,119
is is that the the the most response

1013
00:46:40,950 --> 00:46:38,880

that you get from from your audience do

1014

00:46:41,990 --> 00:46:40,960

you feel it too they usually like it

1015

00:46:44,069 --> 00:46:42,000

tends to be one of some of the more

1016

00:46:46,710 --> 00:46:44,079

popular episodes alien life in general

1017

00:46:48,550 --> 00:46:46,720

colonizing planets but uh we usually do

1018

00:46:49,990 --> 00:46:48,560

one episode on time travel one episode

1019

00:46:52,309 --> 00:46:50,000

on the moon and one episode on mars

1020

00:46:53,109 --> 00:46:52,319

every year just kind of out of habit and

1021

00:46:54,550 --> 00:46:53,119

uh

1022

00:46:56,309 --> 00:46:54,560

obviously i wouldn't bother redoing them

1023

00:46:57,990 --> 00:46:56,319

if people were bored of them but uh they

1024

00:46:59,190 --> 00:46:58,000

do i mean that that's a topic that we

1025

00:47:01,510 --> 00:46:59,200

all love it doesn't even matter how

1026
00:47:03,109 --> 00:47:01,520
campy or unplausible the movie is we

1027
00:47:04,309 --> 00:47:03,119
just love the ultimate histories aspect

1028
00:47:06,069 --> 00:47:04,319
we you know

1029
00:47:08,230 --> 00:47:06,079
give people a reason to watch it that

1030
00:47:10,230 --> 00:47:08,240
doesn't make them have complete you know

1031
00:47:11,829 --> 00:47:10,240
disbelief of it you know some suspension

1032
00:47:13,589 --> 00:47:11,839
going on and they're going to enjoy the

1033
00:47:15,030 --> 00:47:13,599
film because of the what if this and

1034
00:47:16,390 --> 00:47:15,040
because of the strangeness of it you

1035
00:47:17,990 --> 00:47:16,400
know it's like time travel makes sense

1036
00:47:19,430 --> 00:47:18,000
as most of the movies or tv shows that

1037
00:47:21,589 --> 00:47:19,440
use it it's usually

1038
00:47:23,109 --> 00:47:21,599

very badly designed from the scientific

1039

00:47:24,470 --> 00:47:23,119

perspective but at the same time it

1040

00:47:26,309 --> 00:47:24,480

doesn't really matter because it's just

1041

00:47:28,230 --> 00:47:26,319

asking that what if question you know

1042

00:47:29,750 --> 00:47:28,240

watch something like a doctor or strange

1043

00:47:32,150 --> 00:47:29,760

multiverse of madness and worry about

1044

00:47:33,109 --> 00:47:32,160

whether or not it's breaking relativity

1045

00:47:38,710 --> 00:47:33,119

right

1046

00:47:41,270 --> 00:47:38,720

that show has been on the air

1047

00:47:43,589 --> 00:47:41,280

since before television was invented

1048

00:47:45,109 --> 00:47:43,599

right and so if if we look at it in

1049

00:47:45,990 --> 00:47:45,119

those terms

1050

00:47:51,030 --> 00:47:46,000

uh

1051

00:47:52,790 --> 00:47:51,040

travel that that first aired when when

1052

00:47:54,309 --> 00:47:52,800

lincoln was president

1053

00:47:56,309 --> 00:47:54,319

i think it probably well it forced air

1054

00:47:57,829 --> 00:47:56,319

in the year 2100 then the second episode

1055

00:47:59,990 --> 00:47:57,839

was the year 1800

1056

00:48:01,910 --> 00:48:00,000

that's how it works well and there are

1057

00:48:03,910 --> 00:48:01,920

no time travel jokes though any good

1058

00:48:06,069 --> 00:48:03,920

it's it's weird because you think that

1059

00:48:07,349 --> 00:48:06,079

time travel jokes would be there wasn't

1060

00:48:09,589 --> 00:48:07,359

the most time to refine them and make

1061

00:48:12,230 --> 00:48:09,599

them good but every time travel joke is

1062

00:48:14,470 --> 00:48:12,240

awful just awful

1063

00:48:16,390 --> 00:48:14,480

i'm trying my best man

1064

00:48:18,829 --> 00:48:16,400

i'm trying my best so i was gonna tell a

1065

00:48:22,870 --> 00:48:18,839

time travel joke but she didn't like

1066

00:48:26,950 --> 00:48:22,880

it i got sent that three times today

1067

00:48:29,829 --> 00:48:26,960

twice an email and once on social media

1068

00:48:33,030 --> 00:48:29,839

and uh it never gets old but but it's

1069

00:48:35,030 --> 00:48:33,040

it's really true right it and and

1070

00:48:37,829 --> 00:48:35,040

i think that

1071

00:48:38,950 --> 00:48:37,839

all of us recognize our own personal

1072

00:48:42,309 --> 00:48:38,960

mistakes

1073

00:48:44,950 --> 00:48:42,319

blatant stupid things that we had done

1074

00:48:47,349 --> 00:48:44,960

in our past that we knew that we

1075

00:48:49,589 --> 00:48:47,359

shouldn't have done whether it was

1076

00:48:50,950 --> 00:48:49,599

uh skipping school maybe doing more of

1077

00:48:54,710 --> 00:48:50,960

your homework

1078

00:48:57,589 --> 00:48:54,720

uh the the girl or guy that got away

1079

00:49:00,390 --> 00:48:57,599

um crashing your parents car whatever it

1080

00:49:03,270 --> 00:49:00,400

is that you could go you know i should

1081

00:49:06,309 --> 00:49:03,280

have ran a little more track whatever it

1082

00:49:09,109 --> 00:49:06,319

is that there's that part of it i keep

1083

00:49:11,990 --> 00:49:09,119

saying romantic but it is because yeah

1084

00:49:13,510 --> 00:49:12,000

it it it gets that part of of your

1085

00:49:15,190 --> 00:49:13,520

thoughts people mostly i'll think about

1086

00:49:16,790 --> 00:49:15,200

yousef like could i go back in time and

1087

00:49:18,069 --> 00:49:16,800

keep myself from getting you know that

1088

00:49:20,069 --> 00:49:18,079

speeding ticket where i could just gone

1089

00:49:21,589 --> 00:49:20,079

five miles an hour slower then anything

1090

00:49:23,990 --> 00:49:21,599

very big usually can i go with those

1091

00:49:25,750 --> 00:49:24,000

winning lottery numbers uh or they are

1092

00:49:27,270 --> 00:49:25,760

thinking i want to go back in time and

1093

00:49:28,950 --> 00:49:27,280

change that personal thing you know that

1094

00:49:30,630 --> 00:49:28,960

that breakup that didn't need to have

1095

00:49:32,230 --> 00:49:30,640

happened or could happen better that

1096

00:49:33,750 --> 00:49:32,240

friend that i i end up having a fight

1097

00:49:36,069 --> 00:49:33,760

with who doesn't talk to me more because

1098

00:49:37,829 --> 00:49:36,079

i blah and that's the things people tend

1099

00:49:39,510 --> 00:49:37,839

to fear you know i go back in time and

1100

00:49:41,589 --> 00:49:39,520

say goodbye to your grandpa before he

1101

00:49:43,030 --> 00:49:41,599

passed on that's what people think of

1102

00:49:44,470 --> 00:49:43,040

and of course the downside is from the

1103

00:49:46,069 --> 00:49:44,480

physical reality and instead of

1104

00:49:47,990 --> 00:49:46,079

grandfather paradoxes where you go back

1105

00:49:50,390 --> 00:49:48,000

in time and actually kill your grandpa

1106

00:49:51,670 --> 00:49:50,400

and becoming your grandpa because for

1107

00:49:54,069 --> 00:49:51,680

some reason they always have weird

1108

00:49:55,430 --> 00:49:54,079

antics going on in time travel so

1109

00:49:57,270 --> 00:49:55,440

now okay

1110

00:49:59,109 --> 00:49:57,280

this is this is a good point to

1111

00:50:01,349 --> 00:49:59,119

establish a few things because we're

1112

00:50:04,150 --> 00:50:01,359

going to go into directions tonight uh

1113

00:50:07,030 --> 00:50:04,160

different versions of time travel

1114

00:50:08,710 --> 00:50:07,040

um so let's get into some basic uh

1115

00:50:10,870 --> 00:50:08,720

classifications

1116

00:50:13,589 --> 00:50:10,880

um and

1117

00:50:16,470 --> 00:50:13,599

once you mention the grandfather paradox

1118

00:50:18,710 --> 00:50:16,480

and every physicist does when when this

1119

00:50:20,549 --> 00:50:18,720

comes up it's one of the first things uh

1120

00:50:23,589 --> 00:50:20,559

but then once you jump into that then

1121

00:50:26,630 --> 00:50:23,599

there's the possibility of of paradoxes

1122

00:50:27,990 --> 00:50:26,640

uh maybe being impossible that they they

1123

00:50:30,790 --> 00:50:28,000

couldn't happen

1124

00:50:33,829 --> 00:50:30,800

um now let's talk about different

1125

00:50:36,150 --> 00:50:33,839

versions of time travel when i mention

1126

00:50:37,990 --> 00:50:36,160

it to you what's the first thing that

1127

00:50:40,390 --> 00:50:38,000

that that comes to mind

1128

00:50:42,549 --> 00:50:40,400

usually you know close time-like uh

1129

00:50:44,069 --> 00:50:42,559

loops or you can go back in time to

1130

00:50:45,990 --> 00:50:44,079

whenever you started your machine

1131

00:50:47,670 --> 00:50:46,000

working so you can change time only

1132

00:50:50,069 --> 00:50:47,680

roughly made the machine

1133

00:50:53,190 --> 00:50:50,079

or splitting off into another universe

1134

00:50:55,910 --> 00:50:53,200

where it's just i go back in time and i

1135

00:50:58,069 --> 00:50:55,920

shoot hitler and now that different war

1136

00:50:59,510 --> 00:50:58,079

period of time that timeline is separate

1137

00:51:01,510 --> 00:50:59,520

but there's the one that i didn't do it

1138

00:51:02,710 --> 00:51:01,520

that i came from i haven't re-looped

1139

00:51:03,750 --> 00:51:02,720

time i've just gone into another

1140

00:51:06,829 --> 00:51:03,760

timeline

1141

00:51:11,510 --> 00:51:06,839

now both of those versions would

1142

00:51:13,270 --> 00:51:11,520

require a machine or a device

1143

00:51:15,589 --> 00:51:13,280

probably yeah i mean there could be a

1144

00:51:17,589 --> 00:51:15,599

natural phenomena that would do that

1145

00:51:18,950 --> 00:51:17,599

uh i mean i suppose if it was possible

1146

00:51:20,630 --> 00:51:18,960

you could even rule out that so they

1147

00:51:23,190 --> 00:51:20,640

might develop that as an evolutionary

1148

00:51:25,510 --> 00:51:23,200

process

1149

00:51:27,270 --> 00:51:25,520

that's another type of time travel so

1150

00:51:29,190 --> 00:51:27,280

what i'm establishing here out of the

1151
00:51:30,230 --> 00:51:29,200
gate is there's the version of time

1152
00:51:32,870 --> 00:51:30,240
travel

1153
00:51:35,109 --> 00:51:32,880
uh hg wells where you've got a machine

1154
00:51:36,790 --> 00:51:35,119
or a device you're going backwards or

1155
00:51:40,630 --> 00:51:36,800
forwards in time

1156
00:51:43,670 --> 00:51:40,640
and there's that version of time travel

1157
00:51:45,750 --> 00:51:43,680
uh another version of time travel would

1158
00:51:47,829 --> 00:51:45,760
be what

1159
00:51:49,510 --> 00:51:47,839
um you'd have the one where you could do

1160
00:51:51,190 --> 00:51:49,520
some kind of mental process like we

1161
00:51:54,390 --> 00:51:51,200
always saw in that quantum leap show

1162
00:51:57,670 --> 00:51:54,400
with um oh my god i found his name

1163
00:51:58,950 --> 00:51:57,680

scott bakula um if you think he was

1164

00:52:01,030 --> 00:51:58,960

starting that and he somehow jumped back

1165

00:52:02,950 --> 00:52:01,040

into people's previous bodies and lived

1166

00:52:04,630 --> 00:52:02,960

inside them that one would be probably

1167

00:52:06,950 --> 00:52:04,640

outside the normal normal zone of

1168

00:52:08,630 --> 00:52:06,960

science but it's an option

1169

00:52:09,750 --> 00:52:08,640

and a lot of them all kind of

1170

00:52:14,870 --> 00:52:09,760

signs

1171

00:52:16,829 --> 00:52:14,880

and then uh we have uh einstein's oh oh

1172

00:52:17,829 --> 00:52:16,839

uh

1173

00:52:19,510 --> 00:52:17,839

yeah yes

1174

00:52:21,190 --> 00:52:19,520

as we get into that

1175

00:52:23,109 --> 00:52:21,200

um

1176

00:52:24,950 --> 00:52:23,119

was all of that

1177

00:52:27,670 --> 00:52:24,960

math interpreted

1178

00:52:29,910 --> 00:52:27,680

later i mean i never mentioned time

1179

00:52:32,630 --> 00:52:29,920

travel right he didn't he didn't use

1180

00:52:34,309 --> 00:52:32,640

those words this was an interpretation

1181

00:52:37,510 --> 00:52:34,319

of his math

1182

00:52:38,870 --> 00:52:37,520

and and uh equations right

1183

00:52:40,630 --> 00:52:38,880

well to be fair it was emily knew he

1184

00:52:42,390 --> 00:52:40,640

thought his math that uh that was mostly

1185

00:52:43,670 --> 00:52:42,400

uh he was having problems solving

1186

00:52:45,270 --> 00:52:43,680

general relativity and it's general

1187

00:52:47,109 --> 00:52:45,280

relativity not special relativity where

1188

00:52:48,470 --> 00:52:47,119

the time travel options come up and

1189

00:52:50,230 --> 00:52:48,480

that's where they called it emily north

1190

00:52:52,870 --> 00:52:50,240

or she was the one who came up with the

1191

00:52:55,990 --> 00:52:52,880

math for that but um not all of it

1192

00:52:57,030 --> 00:52:56,000

though um but he did mention time travel

1193

00:52:59,670 --> 00:52:57,040

i think here and there but he never

1194

00:53:01,430 --> 00:52:59,680

really focus on it the usual usually

1195

00:53:02,790 --> 00:53:01,440

even his hero is more of a just checking

1196

00:53:03,910 --> 00:53:02,800

stuff theoretically and i don't think

1197

00:53:06,069 --> 00:53:03,920

they are trying to look to cause a

1198

00:53:07,270 --> 00:53:06,079

controversial storm and time travel was

1199

00:53:09,109 --> 00:53:07,280

something people either at you with

1200

00:53:11,030 --> 00:53:09,119

amusement and interest or with a

1201
00:53:13,190 --> 00:53:11,040
complete rejection on the on the face of

1202
00:53:14,390 --> 00:53:13,200
it kind of like with life extension so i

1203
00:53:16,150 --> 00:53:14,400
can't say that he never talked about it

1204
00:53:18,150 --> 00:53:16,160
in detail but i'm not i'm not thinking

1205
00:53:20,069 --> 00:53:18,160
of any particular occasion he did so

1206
00:53:21,670 --> 00:53:20,079
um in the case of the ones that he was

1207
00:53:24,230 --> 00:53:21,680
looking at that's kind of your warm hall

1208
00:53:25,109 --> 00:53:24,240
back in time case which is basically

1209
00:53:28,150 --> 00:53:25,119
where

1210
00:53:30,470 --> 00:53:28,160
you're bending time a very great deal or

1211
00:53:33,190 --> 00:53:30,480
is uh what's his name uh ron mallett

1212
00:53:35,589 --> 00:53:33,200
likes the twisting time um as opposed to

1213
00:53:37,510 --> 00:53:35,599

benny it and those are options too and

1214

00:53:39,190 --> 00:53:37,520

then beside that one it's it's usually i

1215

00:53:42,309 --> 00:53:39,200

tend to object to it because it is what

1216

00:53:45,109 --> 00:53:42,319

i call math base it's not physics based

1217

00:53:47,190 --> 00:53:45,119

um you can have a negative cup of water

1218

00:53:48,710 --> 00:53:47,200

in uh in math you don't actually have a

1219

00:53:50,870 --> 00:53:48,720

negative cup of water in the physical

1220

00:53:52,630 --> 00:53:50,880

universe and a lot of cases with exotic

1221

00:53:54,790 --> 00:53:52,640

matter like negative matter or things

1222

00:53:56,950 --> 00:53:54,800

like that it's not that they couldn't

1223

00:53:58,230 --> 00:53:56,960

exist in theory it's that you know they

1224

00:54:00,230 --> 00:53:58,240

see examples of those and they tend to

1225

00:54:01,829 --> 00:54:00,240

rely on things that happen in math but

1226
00:54:03,910 --> 00:54:01,839
don't necessarily happen in the physical

1227
00:54:05,829 --> 00:54:03,920
universe and we do tend to sometimes

1228
00:54:08,309 --> 00:54:05,839
make the mistake of assuming that math

1229
00:54:10,790 --> 00:54:08,319
describes the universe uh as opposed to

1230
00:54:13,190 --> 00:54:10,800
simply being something that physics uses

1231
00:54:15,750 --> 00:54:13,200
to help it process known data

1232
00:54:18,069 --> 00:54:15,760
and then we have uh

1233
00:54:19,270 --> 00:54:18,079
black holes

1234
00:54:20,870 --> 00:54:19,280
and uh

1235
00:54:21,990 --> 00:54:20,880
now

1236
00:54:23,910 --> 00:54:22,000
this is

1237
00:54:25,910 --> 00:54:23,920
for me i mean the way that we're going

1238
00:54:27,430 --> 00:54:25,920

to talk about kip thorne a few times

1239

00:54:29,750 --> 00:54:27,440

tonight for sure

1240

00:54:31,430 --> 00:54:29,760

um the way that it's presented in

1241

00:54:33,829 --> 00:54:31,440

interstellar

1242

00:54:36,630 --> 00:54:33,839

is is pretty interesting and now

1243

00:54:38,870 --> 00:54:36,640

obviously with a black hole i'll let you

1244

00:54:41,030 --> 00:54:38,880

describe this you kind of have two

1245

00:54:42,950 --> 00:54:41,040

options you can go up to the edge and

1246

00:54:45,510 --> 00:54:42,960

take a peek and then put things in

1247

00:54:47,670 --> 00:54:45,520

reverse before things get out of control

1248

00:54:50,710 --> 00:54:47,680

right and your time traveling at that

1249

00:54:53,750 --> 00:54:50,720

point or you can pass through it and and

1250

00:54:56,150 --> 00:54:53,760

take your chances and both versions of

1251

00:54:57,349 --> 00:54:56,160

it were in interstellar

1252

00:54:58,789 --> 00:54:57,359

um

1253

00:55:01,430 --> 00:54:58,799

what do you make of that do you think

1254

00:55:04,150 --> 00:55:01,440

that that is a viable option

1255

00:55:06,870 --> 00:55:04,160

uh for time travel in the future if we

1256

00:55:09,030 --> 00:55:06,880

ever get a chance to uh cruise up to the

1257

00:55:10,870 --> 00:55:09,040

edge of a black hole and that's if

1258

00:55:12,710 --> 00:55:10,880

cern and the

1259

00:55:15,349 --> 00:55:12,720

large hadron collider doesn't make a

1260

00:55:17,270 --> 00:55:15,359

black hole for us uh before then

1261

00:55:18,710 --> 00:55:17,280

well if it does end up making a large

1262

00:55:21,109 --> 00:55:18,720

black if it does make a black hole on

1263

00:55:22,789 --> 00:55:21,119

this planet and actually causes damage

1264

00:55:24,549 --> 00:55:22,799

the earth our theories on black holes

1265

00:55:25,829 --> 00:55:24,559

are so wrong that we couldn't really

1266

00:55:27,190 --> 00:55:25,839

ziki much else forgiving because they're

1267

00:55:28,789 --> 00:55:27,200

supposed to explode when they get you

1268

00:55:30,390 --> 00:55:28,799

know made of very tight sizes almost

1269

00:55:32,470 --> 00:55:30,400

instantly which is potentially very

1270

00:55:34,230 --> 00:55:32,480

handy for power and weaponry too but the

1271

00:55:36,309 --> 00:55:34,240

really big black holes not the ones that

1272

00:55:38,309 --> 00:55:36,319

get made by dying stars but the ones you

1273

00:55:39,589 --> 00:55:38,319

find like the centers of galaxies those

1274

00:55:42,069 --> 00:55:39,599

you can actually get close enough to the

1275

00:55:43,589 --> 00:55:42,079

ocean ripped apart by the tidal forces

1276

00:55:45,510 --> 00:55:43,599

it's a weird thing the smaller they are

1277

00:55:47,670 --> 00:55:45,520

or the more dangerous they are to you as

1278

00:55:50,309 --> 00:55:47,680

you know near them at those you can slow

1279

00:55:52,069 --> 00:55:50,319

down your you know time so you can pass

1280

00:55:53,589 --> 00:55:52,079

forward in time very quickly

1281

00:55:55,109 --> 00:55:53,599

and of course there's the notion you can

1282

00:55:57,109 --> 00:55:55,119

use that's potentially you know dip

1283

00:55:58,710 --> 00:55:57,119

underneath the curve and somehow power

1284

00:56:00,230 --> 00:55:58,720

out of it afterwards and you know go

1285

00:56:03,190 --> 00:56:00,240

backward in time too

1286

00:56:05,030 --> 00:56:03,200

um that's inside that zone of iffy math

1287

00:56:06,630 --> 00:56:05,040

zone but the other idea is usually that

1288

00:56:08,950 --> 00:56:06,640

you're going to drop down to the center

1289

00:56:10,630 --> 00:56:08,960

of the black hole and you have some uh

1290

00:56:13,109 --> 00:56:10,640

exotic matter usually negative matter

1291

00:56:14,950 --> 00:56:13,119

that's pushing back to keeper of doorway

1292

00:56:16,390 --> 00:56:14,960

openings at war and you could follow

1293

00:56:17,990 --> 00:56:16,400

through that and emoji though in a

1294

00:56:20,470 --> 00:56:18,000

different location in the universe or

1295

00:56:22,150 --> 00:56:20,480

different time the universe or both

1296

00:56:23,589 --> 00:56:22,160

and if that works that's your that's

1297

00:56:24,870 --> 00:56:23,599

your classic wormhole though there are

1298

00:56:27,109 --> 00:56:24,880

like five or six different types of

1299

00:56:28,789 --> 00:56:27,119

wormholes too um and those don't

1300

00:56:29,910 --> 00:56:28,799

necessarily come back into our universe

1301

00:56:31,349 --> 00:56:29,920

either which is another one you might

1302

00:56:33,750 --> 00:56:31,359

already have gone into a parallel

1303

00:56:36,309 --> 00:56:33,760

universe um then they might be one way

1304

00:56:39,670 --> 00:56:36,319

they might be two-way there are so many

1305

00:56:40,950 --> 00:56:39,680

if's on that math but uh yeah someone

1306

00:56:42,630 --> 00:56:40,960

like that yeah

1307

00:56:44,390 --> 00:56:42,640

were you uh

1308

00:56:48,230 --> 00:56:44,400

kip thorne's book the science of

1309

00:56:50,789 --> 00:56:48,240

interstellar um is absolutely required

1310

00:56:52,309 --> 00:56:50,799

reading uh for anybody in this community

1311

00:56:54,230 --> 00:56:52,319

and certainly if you're interested in

1312

00:56:56,789 --> 00:56:54,240

the subject and then you can go back and

1313

00:56:59,109 --> 00:56:56,799

watch interstellar again and understand

1314

00:57:00,950 --> 00:56:59,119

the importance of of kip thorne who

1315

00:57:01,750 --> 00:57:00,960

developed the film he wasn't brought in

1316

00:57:03,589 --> 00:57:01,760

as

1317

00:57:05,349 --> 00:57:03,599

this is a film project that he had

1318

00:57:07,190 --> 00:57:05,359

shopped and worked on for years and

1319

00:57:09,990 --> 00:57:07,200

years and he talks about that in the

1320

00:57:11,990 --> 00:57:10,000

book um so anyway

1321

00:57:13,990 --> 00:57:12,000

this just wasn't a christopher nolan

1322

00:57:16,069 --> 00:57:14,000

film out of the gate this was something

1323

00:57:20,470 --> 00:57:16,079

that kip thorne had developed with his

1324

00:57:25,510 --> 00:57:23,190

matthew mcconaughey

1325

00:57:28,069 --> 00:57:25,520

passes through the black hole and is not

1326

00:57:31,750 --> 00:57:28,079

spaghettified

1327

00:57:33,430 --> 00:57:31,760

and kip thorne describes in the book how

1328

00:57:36,549 --> 00:57:33,440

this is possible

1329

00:57:38,309 --> 00:57:36,559

um it goes against the grain of

1330

00:57:41,190 --> 00:57:38,319

everything else that we understand about

1331

00:57:43,109 --> 00:57:41,200

black holes up up to this point uh were

1332

00:57:45,589 --> 00:57:43,119

you okay with that that

1333

00:57:48,230 --> 00:57:45,599

you know he he he didn't have a helmet

1334

00:57:51,349 --> 00:57:50,150

he didn't have anything and the ship

1335

00:57:53,270 --> 00:57:51,359

dissolves

1336

00:57:56,710 --> 00:57:53,280

right there's no problem passing into

1337

00:57:58,549 --> 00:57:56,720

one if if a few different things occur

1338

00:58:00,470 --> 00:57:58,559

one you've got one that's just so big

1339

00:58:01,910 --> 00:58:00,480

again like the galactic center ones that

1340

00:58:04,069 --> 00:58:01,920

you're not actually being torn apart by

1341

00:58:05,910 --> 00:58:04,079

title forces themselves and again they

1342

00:58:07,670 --> 00:58:05,920

don't you know million mass black holes

1343

00:58:10,069 --> 00:58:07,680

and these do exist right at least we

1344

00:58:12,230 --> 00:58:10,079

assume so the evidence is very solid we

1345

00:58:13,910 --> 00:58:12,240

have another one

1346

00:58:15,910 --> 00:58:13,920

probably several larger ones throughout

1347

00:58:19,030 --> 00:58:15,920

the galaxy two and the tens of thousands

1348

00:58:20,549 --> 00:58:19,040

of solar masses range and um

1349

00:58:22,549 --> 00:58:20,559

because our galaxy is such a cannibal

1350

00:58:24,150 --> 00:58:22,559

it's like 50 different galaxies in here

1351
00:58:25,829 --> 00:58:24,160
but the other option of course would be

1352
00:58:27,910 --> 00:58:25,839
that you know as we say you you wrap

1353
00:58:30,069 --> 00:58:27,920
yourself or you wrap the the wormhole

1354
00:58:31,829 --> 00:58:30,079
pathway in an exotic matter like

1355
00:58:33,510 --> 00:58:31,839
negative matter if you've got it and

1356
00:58:35,109 --> 00:58:33,520
then there is one other one that you can

1357
00:58:36,549 --> 00:58:35,119
use in a case like that that that's

1358
00:58:38,069 --> 00:58:36,559
always worth mind

1359
00:58:40,309 --> 00:58:38,079
we think that it might be possible to do

1360
00:58:41,430 --> 00:58:40,319
a wormhole that was very tiny like just

1361
00:58:43,670 --> 00:58:41,440
enough to be able to get a signal

1362
00:58:45,430 --> 00:58:43,680
through as at all well if you have

1363
00:58:47,670 --> 00:58:45,440

sufficient technology you can transmit

1364

00:58:49,510 --> 00:58:47,680

all the data that a person's made up out

1365

00:58:51,190 --> 00:58:49,520

of and reassemble them on the other side

1366

00:58:52,950 --> 00:58:51,200

well if information is preserved and it

1367

00:58:54,630 --> 00:58:52,960

falls through a black hole you can

1368

00:58:56,390 --> 00:58:54,640

conceivably

1369

00:58:57,589 --> 00:58:56,400

pull that information out either on the

1370

00:58:59,030 --> 00:58:57,599

other end of the worm hole no matter how

1371

00:59:01,589 --> 00:58:59,040

much the person was ripped to pieces by

1372

00:59:04,390 --> 00:59:01,599

it or potentially in some versions it

1373

00:59:06,710 --> 00:59:04,400

could be removing over time uh as the

1374

00:59:08,390 --> 00:59:06,720

black hole evaporates and that's there's

1375

00:59:09,910 --> 00:59:08,400

again a lot of different ways that the

1376

00:59:11,670 --> 00:59:09,920

data might happen on those until we

1377

00:59:13,190 --> 00:59:11,680

actually get up and examine a black hole

1378

00:59:15,190 --> 00:59:13,200

or make one in the lab which will

1379

00:59:16,390 --> 00:59:15,200

actually probably happen sooner i guess

1380

00:59:18,789 --> 00:59:16,400

uh we're not really gonna be able to

1381

00:59:20,470 --> 00:59:18,799

confirm these yet but that would be the

1382

00:59:22,230 --> 00:59:20,480

options available and yeah he goes

1383

00:59:24,069 --> 00:59:22,240

through i can't which ones he discusses

1384

00:59:25,349 --> 00:59:24,079

besides the main one but i i want i

1385

00:59:27,910 --> 00:59:25,359

think the one for no seller was just a

1386

00:59:29,870 --> 00:59:27,920

very large black hole yeah

1387

00:59:32,230 --> 00:59:29,880

i forget the name of it

1388

00:59:35,829 --> 00:59:32,240

giganticon or yeah that was probably it

1389

00:59:37,270 --> 00:59:35,839

was something that meant big but

1390

00:59:38,390 --> 00:59:37,280

let me ask you this before the break

1391

00:59:40,309 --> 00:59:38,400

we've got

1392

00:59:44,069 --> 00:59:40,319

about 45 seconds

1393

00:59:46,230 --> 00:59:44,079

um with what you know now and you're at

1394

00:59:47,829 --> 00:59:46,240

you're in sagittarius eight right you're

1395

00:59:50,470 --> 00:59:47,839

there you're at uh

1396

00:59:51,670 --> 00:59:50,480

uh you're looking down the center of our

1397

00:59:54,230 --> 00:59:51,680

black hole

1398

00:59:55,829 --> 00:59:54,240

uh do you do you cruise through it do

1399

00:59:57,829 --> 00:59:55,839

you feel do you feel like you would

1400

00:59:59,430 --> 00:59:57,839

survive are you okay with that

1401

01:00:01,030 --> 00:59:59,440

i don't think i'd survive i think that

1402

01:00:03,829 --> 01:00:01,040

you you'd fall through that black hole

1403

01:00:05,990 --> 01:00:03,839

and eventually end up inside a boiling

1404

01:00:08,630 --> 01:00:06,000

hot mass at the center uh after you're

1405

01:00:10,150 --> 01:00:08,640

eventually killed on the far down um but

1406

01:00:12,870 --> 01:00:10,160

i tend to think of black holes of that

1407

01:00:15,109 --> 01:00:12,880

size as more useful for building giant

1408

01:00:17,030 --> 01:00:15,119

shells around as opposed to dumping

1409

01:00:19,589 --> 01:00:17,040

stuff down i like them for power plants

1410

01:00:21,829 --> 01:00:19,599

and and planets giant planets

1411

01:00:24,950 --> 01:00:21,839

better than time traveling oh my god

1412

01:00:27,190 --> 01:00:24,960

uh uh okay 15 seconds when you look at a

1413

01:00:29,750 --> 01:00:27,200

black hole from the side we know what we

1414

01:00:31,270 --> 01:00:29,760

see from the front right it's black it's

1415

01:00:35,349 --> 01:00:31,280

void of light

1416

01:00:37,750 --> 01:00:35,359

from the side is it just completely flat

1417

01:00:39,510 --> 01:00:37,760

no no no three-dimensional that's that's

1418

01:00:42,150 --> 01:00:39,520

the tricky part about some individuals

1419

01:00:44,309 --> 01:00:42,160

it's a black ball it's a black sphere

1420

01:00:45,910 --> 01:00:44,319

yeah out to the event horizon and inside

1421

01:00:47,190 --> 01:00:45,920

it's a glowing hot mass that you can't

1422

01:00:49,190 --> 01:00:47,200

see and then around it though you get

1423

01:00:50,390 --> 01:00:49,200

the accretion disk and it's just kind of

1424

01:00:51,750 --> 01:00:50,400

the nature of these things they almost

1425

01:00:53,750 --> 01:00:51,760

always end up dislike for the same

1426

01:00:56,710 --> 01:00:53,760

reason planetary solar systems or

1427

01:00:57,910 --> 01:00:56,720

galaxies tend to discount a lot that's a

1428

01:00:59,750 --> 01:00:57,920

something you don't see with dark matter

1429

01:01:01,670 --> 01:00:59,760

for instance why don't see anything with

1430

01:01:04,069 --> 01:01:01,680

dark matter but you know why that's more

1431

01:01:06,309 --> 01:01:04,079

field as they're chewing up and eating

1432

01:01:08,950 --> 01:01:06,319

and sucking in everything they're just

1433

01:01:11,430 --> 01:01:08,960

growing in mass yeah yeah they grow in

1434

01:01:13,270 --> 01:01:11,440

mass and they give off tons of radiation

1435

01:01:15,990 --> 01:01:13,280

just outside the event horizon as things

1436

01:01:17,349 --> 01:01:16,000

fall in and basically go nuclear levels

1437

01:01:20,069 --> 01:01:17,359

of energy before they hit the event

1438

01:01:21,670 --> 01:01:20,079

horizon hawking radiation right no

1439

01:01:22,710 --> 01:01:21,680

that's that's that's slightly different

1440

01:01:25,510 --> 01:01:22,720

we'll have to get the one after the

1441

01:01:28,710 --> 01:01:25,520

break but and why why are you so smart

1442

01:01:30,069 --> 01:01:28,720

man am i why is that

1443

01:01:31,430 --> 01:01:30,079

not as smart as either the gentleman we

1444

01:01:33,670 --> 01:01:31,440

were discussing that

1445

01:01:36,069 --> 01:01:33,680

thought is a brilliant man let's take

1446

01:01:37,990 --> 01:01:36,079

our break right here you know i met him

1447

01:01:39,670 --> 01:01:38,000

did i ever tell you my stephen uh

1448

01:01:41,270 --> 01:01:39,680

hawking story nope

1449

01:01:43,510 --> 01:01:41,280

all right i'll share that with you after

1450

01:01:45,430 --> 01:01:43,520

the break it's it's not as exciting as

1451
01:01:46,789 --> 01:01:45,440
you would think but it was pretty cool i

1452
01:01:47,910 --> 01:01:46,799
talked to him

1453
01:01:50,829 --> 01:01:47,920
i did

1454
01:01:55,109 --> 01:01:50,839
he asked me if i was a

1455
01:01:57,190 --> 01:01:55,119
cop typed it on his screen are you a cop

1456
01:01:59,029 --> 01:01:57,200
i'm not making that up this is pizza

1457
01:02:01,029 --> 01:01:59,039
black alright meow city church tonight

1458
01:02:03,750 --> 01:02:01,039
isaac arthur is with us

1459
01:02:05,670 --> 01:02:03,760
we are talking time travel

1460
01:02:09,110 --> 01:02:05,680
stay with us we'll be right back after

1461
01:02:29,910 --> 01:02:09,120
this short break this is fade to black

1462
01:02:34,309 --> 01:02:32,069
this is nicole church daughter of you

1463
01:02:36,390 --> 01:02:34,319

know who and you're listening to fade to

1464

01:02:39,829 --> 01:02:36,400

black on jimmychurchradio.com

1465

01:02:43,510 --> 01:02:41,910

you're listening to jimmy church and

1466

01:02:49,910 --> 01:02:43,520

fade to black

1467

01:02:56,390 --> 01:02:52,230

you're listening to jimmy church fade to

1468

01:02:59,630 --> 01:02:58,549

fate to black will now pause for alien

1469

01:03:04,950 --> 01:02:59,640

identification

1470

01:03:09,750 --> 01:03:07,109

when you take the beans from central

1471

01:03:12,150 --> 01:03:09,760

america with dashes of indonesian and

1472

01:03:15,349 --> 01:03:12,160

african mixed in and then roasted to the

1473

01:03:17,829 --> 01:03:15,359

dark side of fade to black you create

1474

01:03:20,789 --> 01:03:17,839

the ultimate brew of fringe

1475

01:03:24,069 --> 01:03:20,799

introducing the fade to black blend from

1476

01:03:26,870 --> 01:03:24,079

river moon coffee yes river moon's

1477

01:03:29,670 --> 01:03:26,880

darkest customized roast was created for

1478

01:03:32,309 --> 01:03:29,680

the love of fade to black

1479

01:03:34,870 --> 01:03:32,319

the alchemy of masterful roasting and

1480

01:03:38,470 --> 01:03:34,880

smoking the beans is in every sip of

1481

01:03:39,910 --> 01:03:38,480

this full-bodied dark java i need my

1482

01:03:42,470 --> 01:03:39,920

coffee doc

1483

01:03:45,029 --> 01:03:42,480

deep with distinct bittersweet chocolate

1484

01:03:47,430 --> 01:03:45,039

highlights just like the bunker

1485

01:03:50,309 --> 01:03:47,440

leaning further into the darkness of the

1486

01:03:53,230 --> 01:03:50,319

roast is fade to black blend from river

1487

01:03:55,270 --> 01:03:53,240

moon coffee just click on the banner at

1488

01:03:59,029 --> 01:03:55,280

jimmychurchradio.com and use the promo

1489

01:04:00,870 --> 01:03:59,039

code f2b blend for 15 off of your order

1490

01:04:03,589 --> 01:04:00,880

today

1491

01:04:06,390 --> 01:04:03,599

this is the only way

1492

01:04:08,710 --> 01:04:06,400

this is

1493

01:04:10,470 --> 01:04:08,720

make contact

1494

01:04:13,349 --> 01:04:10,480

this is jimmy church of fade to black

1495

01:04:15,670 --> 01:04:13,359

and you can get our podcast for just two

1496

01:04:17,990 --> 01:04:15,680

dollars per month all you have to do is

1497

01:04:20,870 --> 01:04:18,000

click on the podcast banner over at

1498

01:04:22,950 --> 01:04:20,880

jimmychurchradio.com

1499

01:04:26,069 --> 01:04:22,960

hello fader knots jimmy church here

1500

01:04:28,390 --> 01:04:26,079

you've seen me with my thunderstorm now

1501

01:04:30,630 --> 01:04:28,400

you can purify the air in your home and

1502

01:04:32,950 --> 01:04:30,640

get healthy clean fresh smelling air and

1503

01:04:34,870 --> 01:04:32,960

eliminate odors just like i do right

1504

01:04:37,430 --> 01:04:34,880

here in the bunker the eden pier

1505

01:04:39,910 --> 01:04:37,440

thunderstorm uses oxy technology that

1506

01:04:42,230 --> 01:04:39,920

naturally sends out o3 molecules into

1507

01:04:44,549 --> 01:04:42,240

the air which seek out odors and air

1508

01:04:47,109 --> 01:04:44,559

pollutants in your home and destroys

1509

01:04:49,589 --> 01:04:47,119

them it's called a thunderstorm because

1510

01:04:52,150 --> 01:04:49,599

it purifies the air just like after a

1511

01:04:55,029 --> 01:04:52,160

thunderstorm and right now you can save

1512

01:04:58,069 --> 01:04:55,039

200 on an eden pier thunderstorm three

1513

01:05:00,390 --> 01:04:58,079

pack for whole home protection with this

1514

01:05:02,309 --> 01:05:00,400

special offer you're getting three units

1515

01:05:04,670 --> 01:05:02,319

for under two hundred dollars

1516

01:05:08,390 --> 01:05:04,680

seriously go to

1517

01:05:10,950 --> 01:05:08,400

edenpuredeals.com and use fader 3

1518

01:05:13,589 --> 01:05:10,960

shipping is free and it's easy just

1519

01:05:14,470 --> 01:05:13,599

scroll down you'll see my name right

1520

01:05:17,589 --> 01:05:14,480

there

1521

01:05:23,670 --> 01:05:17,599

jimmy church click on it and get your

1522

01:05:27,710 --> 01:05:24,950

do you have an interest in the

1523

01:05:30,470 --> 01:05:27,720

paranormal then you'll love the

1524

01:05:32,150 --> 01:05:30,480

unexnetwork.com the x is your streaming

1525

01:05:35,270 --> 01:05:32,160

audio and video for everything

1526

01:05:38,789 --> 01:05:35,280

supernatural strange and mysterious like

1527

01:05:41,109 --> 01:05:38,799

ufos bigfoot ghosts and so much more

1528

01:05:44,470 --> 01:05:41,119

from hosts like jimmy church whitley

1529

01:05:47,029 --> 01:05:44,480

strieber micah hanks and christina gomez

1530

01:05:49,109 --> 01:05:47,039

visit the unexnetwork.com show page for

1531

01:05:51,589 --> 01:05:49,119

a complete list of all the paranormal

1532

01:05:54,270 --> 01:05:51,599

programs you'll find on the axe be sure

1533

01:05:57,430 --> 01:05:54,280

to follow us on twitter for updates at

1534

01:06:00,230 --> 01:05:57,440

kunxdb follow our facebook group on x

1535

01:06:05,040 --> 01:06:00,240

network find the podcast on spotify

1536

01:06:05,050 --> 01:06:08,950

[Music]

1537

01:06:13,829 --> 01:06:11,109

right now the world couldn't be more

1538

01:06:16,630 --> 01:06:13,839

chaotic history shows us what gold does

1539

01:06:19,109 --> 01:06:16,640

when the world goes crazy it goes up in

1540

01:06:21,670 --> 01:06:19,119

value right now we're in unprecedented

1541

01:06:24,630 --> 01:06:21,680

times the pandemic the war in ukraine

1542

01:06:26,950 --> 01:06:24,640

the devaluation of the us dollar gold

1543

01:06:28,870 --> 01:06:26,960

and other precious metals are a defense

1544

01:06:31,430 --> 01:06:28,880

measure against the hyperinflation

1545

01:06:33,750 --> 01:06:31,440

that's happening right now so what can

1546

01:06:35,829 --> 01:06:33,760

you do to protect yourself call my

1547

01:06:37,990 --> 01:06:35,839

friend allen johnson at united gold

1548

01:06:40,150 --> 01:06:38,000

group he's dedicated to helping people

1549

01:06:42,549 --> 01:06:40,160

secure their retirement income he'll

1550

01:06:44,630 --> 01:06:42,559

help you with gold with silver and other

1551

01:06:47,990 --> 01:06:44,640

precious metals and show you how to set

1552

01:06:50,470 --> 01:06:48,000

up your own self-directed ira safe and

1553

01:06:52,549 --> 01:06:50,480

secure united gold group makes gold

1554

01:06:55,109 --> 01:06:52,559

ownership easy and affordable there

1555

01:06:57,270 --> 01:06:55,119

couldn't be a better time so call now

1556

01:06:59,910 --> 01:06:57,280

and get a silver american eagle proof

1557

01:07:03,270 --> 01:06:59,920

set with a qualified ira call

1558

01:07:03,280 --> 01:07:07,270

that's 800-753-8534

1559

01:07:11,270 --> 01:07:08,990

or visit

1560

01:07:12,829 --> 01:07:11,280

unitedgoldgroup.com reach out to my

1561

01:07:16,230 --> 01:07:12,839

friend alan

1562

01:07:19,349 --> 01:07:16,240

johnson nine out of ten geneticists

1563

01:07:23,109 --> 01:07:21,750

fade to black

1564

01:07:25,750 --> 01:07:23,119

is not

1565

01:07:29,910 --> 01:07:25,760

your father's radio show

1566

01:07:31,990 --> 01:07:29,920

on the game changer radio network

1567

01:07:38,890 --> 01:07:32,000

hi this is rob reiner from anvil and

1568

01:07:38,900 --> 01:07:58,950

[Music]

1569

01:08:02,870 --> 01:08:01,349

oh welcome back fade to black i'm your

1570

01:08:05,990 --> 01:08:02,880

host jimmy church

1571

01:08:08,630 --> 01:08:06,000

tonight isaac arthur is with us

1572

01:08:10,390 --> 01:08:08,640

and i always you know i don't want to be

1573

01:08:13,109 --> 01:08:10,400

so cavalier but

1574

01:08:15,349 --> 01:08:13,119

but i always feel a little smarter and a

1575

01:08:17,990 --> 01:08:15,359

little bit better

1576

01:08:19,189 --> 01:08:18,000

as a human being after isaac is on the

1577

01:08:20,950 --> 01:08:19,199

show with us and we're doing that

1578

01:08:24,229 --> 01:08:20,960

tonight with time travel

1579

01:08:27,430 --> 01:08:24,239

and uh now

1580

01:08:28,709 --> 01:08:27,440

let's get into the facts of the case

1581

01:08:30,709 --> 01:08:28,719

and then uh

1582

01:08:33,430 --> 01:08:30,719

we'll we'll branch off

1583

01:08:37,349 --> 01:08:33,440

but but isaac time travel is

1584

01:08:39,749 --> 01:08:37,359

absolutely 100 traveling to the future

1585

01:08:40,870 --> 01:08:39,759

is not only possible but we could do it

1586

01:08:44,070 --> 01:08:40,880

today

1587

01:08:45,430 --> 01:08:44,080

let me ask you this question

1588

01:08:47,990 --> 01:08:45,440

why

1589

01:08:49,829 --> 01:08:48,000

don't we like right now

1590

01:08:53,030 --> 01:08:49,839

starting tomorrow

1591

01:08:56,390 --> 01:08:53,040

why don't we build a

1592

01:08:59,990 --> 01:08:56,400

dragster funny car of a spaceship right

1593

01:09:01,910 --> 01:09:00,000

now in in in low earth orbit

1594

01:09:04,550 --> 01:09:01,920

nothing but engine

1595

01:09:07,590 --> 01:09:04,560

throw a couple of astronauts on it

1596

01:09:09,110 --> 01:09:07,600

and blast that thing out to pluto

1597

01:09:10,149 --> 01:09:09,120

and back

1598

01:09:13,510 --> 01:09:10,159

and

1599

01:09:15,829 --> 01:09:13,520

why don't

1600

01:09:19,430 --> 01:09:15,839

we could do that tomorrow we literally

1601

01:09:20,789 --> 01:09:19,440

could do that tomorrow we um voyager how

1602

01:09:24,309 --> 01:09:20,799

many years did it take to go

1603

01:09:25,990 --> 01:09:24,319

interstellar right and and that was just

1604

01:09:27,910 --> 01:09:26,000

uh uh

1605

01:09:29,990 --> 01:09:27,920

giving it a little gas and pointing it

1606

01:09:32,229 --> 01:09:30,000

in a direction i think what was it 17

1607

01:09:35,829 --> 01:09:32,239

000 miles per hour or whatever it was

1608

01:09:38,709 --> 01:09:35,839

um but but build uh

1609

01:09:41,110 --> 01:09:38,719

uh a ship you know a a couple of seats

1610

01:09:42,550 --> 01:09:41,120

with two engines on the back that's it

1611

01:09:44,149 --> 01:09:42,560

right

1612

01:09:45,669 --> 01:09:44,159

and just go

1613

01:09:49,030 --> 01:09:45,679

and and

1614

01:09:51,110 --> 01:09:49,040

and as as fast as we can

1615

01:09:52,470 --> 01:09:51,120

and and then measure the clocks and do

1616

01:09:54,470 --> 01:09:52,480

an experiment

1617

01:09:56,229 --> 01:09:54,480

and we haven't done that with uh even

1618

01:09:57,910 --> 01:09:56,239

with aircraft plates we just uh we put

1619

01:09:59,510 --> 01:09:57,920

an atomic clock on it flowing around the

1620

01:10:01,669 --> 01:09:59,520

ward and seen if it matched up their

1621

01:10:03,669 --> 01:10:01,679

estimates we did but those were atomic

1622

01:10:06,550 --> 01:10:03,679

clocks being off by you know not even a

1623

01:10:08,470 --> 01:10:06,560

nanosecond yeah a million

1624

01:10:10,390 --> 01:10:08,480

yeah yeah yeah yeah but you know what

1625

01:10:12,470 --> 01:10:10,400

i'm why don't we do that that sounds

1626

01:10:14,470 --> 01:10:12,480

like a pretty fun experiment

1627

01:10:16,950 --> 01:10:14,480

no arm no foul just

1628

01:10:18,390 --> 01:10:16,960

you know five years in space you know go

1629

01:10:20,870 --> 01:10:18,400

out two and a half years in one

1630

01:10:22,149 --> 01:10:20,880

direction two and a half years back

1631

01:10:23,669 --> 01:10:22,159

point out that's what they the other

1632

01:10:25,430 --> 01:10:23,679

thinking of plant the apes the original

1633

01:10:26,870 --> 01:10:25,440

film was

1634

01:10:29,430 --> 01:10:26,880

should get out of control and too fast

1635

01:10:31,750 --> 01:10:29,440

and it ended up in the future but um i

1636

01:10:33,750 --> 01:10:31,760

think the problem is until you get up to

1637

01:10:35,590 --> 01:10:33,760

a decent fraction of light speed and

1638

01:10:37,669 --> 01:10:35,600

voyager you know i can't remember six

1639

01:10:40,310 --> 01:10:37,679

speed but 70 000 miles per hour that's

1640

01:10:42,390 --> 01:10:40,320

good enough the speed of light is

1641

01:10:44,790 --> 01:10:42,400

10 times that

1642

01:10:47,510 --> 01:10:44,800

per second as opposed to per hour so you

1643

01:10:48,709 --> 01:10:47,520

know the speed of light is 186 000 miles

1644

01:10:50,470 --> 01:10:48,719

per second

1645

01:10:52,550 --> 01:10:50,480

and we don't get anywhere close to that

1646

01:10:54,630 --> 01:10:52,560

and that thing kind of scales up

1647

01:10:57,110 --> 01:10:54,640

with not quite the square it's one minus

1648

01:10:59,030 --> 01:10:57,120

the square root oh square root of 1

1649

01:11:01,910 --> 01:10:59,040

minus the square of the speed relative

1650

01:11:03,510 --> 01:11:01,920

to the light but uh the lens factor and

1651

01:11:04,630 --> 01:11:03,520

that thing goes slowly so even when

1652

01:11:05,990 --> 01:11:04,640

you're up to

1653

01:11:07,270 --> 01:11:06,000

i think it's eighty-six percent of the

1654

01:11:08,630 --> 01:11:07,280

speed of light that's when you finally

1655

01:11:10,070 --> 01:11:08,640

hit the point the time would be moving

1656

01:11:11,910 --> 01:11:10,080

at half speed

1657

01:11:14,149 --> 01:11:11,920

and to do that what you need is either

1658

01:11:16,630 --> 01:11:14,159

antimatter and large quantities

1659

01:11:18,390 --> 01:11:16,640

a black or hawking radiation based ship

1660

01:11:21,590 --> 01:11:18,400

drive which is different than the normal

1661

01:11:23,350 --> 01:11:21,600

type of radiation of a black hole uh or

1662

01:11:26,470 --> 01:11:23,360

uh if you don't have antimatter or black

1663

01:11:28,709 --> 01:11:26,480

holes you can use gigantic lasers uh the

1664

01:11:31,430 --> 01:11:28,719

kind that you would for a man ship like

1665

01:11:33,590 --> 01:11:31,440

that you'd probably need ones that could

1666

01:11:35,430 --> 01:11:33,600

cut grooves inside planets in terms of

1667

01:11:37,750 --> 01:11:35,440

how much energy they put out which works

1668

01:11:39,510 --> 01:11:37,760

for me i love gigantic lasers i think

1669

01:11:40,870 --> 01:11:39,520

they're all future for space travel but

1670

01:11:42,229 --> 01:11:40,880

uh you might have a little bit of

1671

01:11:43,590 --> 01:11:42,239

problem finding that one at the moment

1672

01:11:44,709 --> 01:11:43,600

it might cause some international

1673

01:11:47,990 --> 01:11:44,719

tensions

1674

01:11:49,510 --> 01:11:48,000

yeah but okay okay okay don't ruin this

1675

01:11:51,590 --> 01:11:49,520

for me isaac

1676

01:11:54,070 --> 01:11:51,600

okay let's try this again was that a

1677

01:11:56,070 --> 01:11:54,080

gallon size coffee cup hold that up

1678

01:12:00,229 --> 01:11:56,080

again

1679

01:12:02,630 --> 01:12:00,239

holy smokes you don't play around okay

1680

01:12:04,630 --> 01:12:02,640

and it's coffee too i know it is right

1681

01:12:09,430 --> 01:12:04,640

yeah

1682

01:12:12,630 --> 01:12:09,440

if but let's say if uh it's just a nice

1683

01:12:15,669 --> 01:12:12,640

not that fast 250 000 miles per hour

1684

01:12:17,189 --> 01:12:15,679

right omumu speed

1685

01:12:18,550 --> 01:12:17,199

and and

1686

01:12:20,149 --> 01:12:18,560

and out

1687

01:12:22,390 --> 01:12:20,159

to pluto

1688

01:12:25,510 --> 01:12:22,400

and turn around and come back

1689

01:12:27,189 --> 01:12:25,520

uh and and at 250 000 miles per hour

1690

01:12:29,030 --> 01:12:27,199

you're not talking about that much time

1691

01:12:30,950 --> 01:12:29,040

to get out to the edge

1692

01:12:33,830 --> 01:12:30,960

and and turn around and come back but

1693

01:12:37,669 --> 01:12:33,840

but to come back and and

1694

01:12:40,870 --> 01:12:37,679

your watch your calendar on on the ship

1695

01:12:42,390 --> 01:12:40,880

you've been gone for uh for five years

1696

01:12:44,630 --> 01:12:42,400

but you come back

1697

01:12:46,709 --> 01:12:44,640

uh six months in the future

1698

01:12:48,550 --> 01:12:46,719

uh wouldn't that be a pretty interesting

1699

01:12:50,950 --> 01:12:48,560

experiment that we could actually do

1700

01:12:52,550 --> 01:12:50,960

right now i i honestly think that's

1701

01:12:55,110 --> 01:12:52,560

something that we should do it's right

1702

01:12:57,189 --> 01:12:55,120

within our grasp if if we i mean pete

1703

01:12:58,630 --> 01:12:57,199

warden from brakes to straw shot that's

1704

01:12:59,910 --> 01:12:58,640

the one is why i use the big laser beam

1705

01:13:02,470 --> 01:12:59,920

to send uh

1706

01:13:04,550 --> 01:13:02,480

little chip size uh you know space

1707

01:13:07,189 --> 01:13:04,560

probes to other solar systems those only

1708

01:13:09,270 --> 01:13:07,199

go to about 30 of light speed tops and

1709

01:13:10,870 --> 01:13:09,280

uh they have quite a pretty big array of

1710

01:13:12,709 --> 01:13:10,880

lasers to get that little giant ship

1711

01:13:14,550 --> 01:13:12,719

that weighs like one gram up to speed i

1712

01:13:16,550 --> 01:13:14,560

can't what the actual weight is it might

1713

01:13:18,630 --> 01:13:16,560

be more than that but it's it's

1714

01:13:19,750 --> 01:13:18,640

problematic but even 250 000 miles now

1715

01:13:21,510 --> 01:13:19,760

and we might be able to build a shape

1716

01:13:23,350 --> 01:13:21,520

ship we could build a ship probably that

1717

01:13:25,750 --> 01:13:23,360

could go that fast if we want to throw

1718

01:13:27,350 --> 01:13:25,760

money at it problem is that's still

1719

01:13:28,229 --> 01:13:27,360

not even a thousandth of the speed of

1720

01:13:29,990 --> 01:13:28,239

light

1721

01:13:32,070 --> 01:13:30,000

and uh because again it comes out much

1722

01:13:33,910 --> 01:13:32,080

time you know that much like a second

1723

01:13:36,470 --> 01:13:33,920

and a half is how fast i would usually

1724

01:13:38,149 --> 01:13:36,480

cover that distance per hour instead and

1725

01:13:39,830 --> 01:13:38,159

that means it's going to take

1726

01:13:42,149 --> 01:13:39,840

what a couple years to get out to pluto

1727

01:13:43,510 --> 01:13:42,159

i think uh at that point still although

1728

01:13:46,149 --> 01:13:43,520

those are i'm running the numbers in my

1729

01:13:47,590 --> 01:13:46,159

head and i ain't that good at math um

1730

01:13:48,709 --> 01:13:47,600

which time dilation at something like

1731

01:13:51,350 --> 01:13:48,719

that is still going to be like one

1732

01:13:53,110 --> 01:13:51,360

millionth of a second slower per second

1733

01:13:54,950 --> 01:13:53,120

you know like go around a million years

1734

01:13:56,470 --> 01:13:54,960

and lose a few minutes or something like

1735

01:13:57,910 --> 01:13:56,480

that or a few years

1736

01:13:59,350 --> 01:13:57,920

uh it's not gonna be that much of a

1737

01:14:02,630 --> 01:13:59,360

change over you really have to get to

1738

01:14:05,270 --> 01:14:02,640

the extreme end of relativistic speed

1739

01:14:07,590 --> 01:14:05,280

special relativity or general relativity

1740

01:14:09,430 --> 01:14:07,600

and kind of a context on this we can

1741

01:14:11,430 --> 01:14:09,440

calculate your speed in terms of how

1742

01:14:13,350 --> 01:14:11,440

fast you're you're slowing time down by

1743

01:14:14,870 --> 01:14:13,360

your speed away from something when

1744

01:14:16,709 --> 01:14:14,880

you're talking the gravity angle you can

1745

01:14:18,550 --> 01:14:16,719

like black horse for instance if you

1746

01:14:20,390 --> 01:14:18,560

know the escape velocity of that object

1747

01:14:23,030 --> 01:14:20,400

from wherever you are relative to it

1748

01:14:24,630 --> 01:14:23,040

usually that's going to be very loosely

1749

01:14:26,310 --> 01:14:24,640

you know correlating to the time

1750

01:14:28,550 --> 01:14:26,320

dilation as well so

1751

01:14:29,990 --> 01:14:28,560

if you know something would be 86

1752

01:14:31,430 --> 01:14:30,000

percent of the speed of light to get you

1753

01:14:33,270 --> 01:14:31,440

out of things gravity well which would

1754

01:14:35,990 --> 01:14:33,280

be very close to a black hole or maybe

1755

01:14:38,310 --> 01:14:36,000

lightning or neutron star um that would

1756

01:14:40,470 --> 01:14:38,320

be half speed you know your time will be

1757

01:14:42,709 --> 01:14:40,480

going about that speed for you so only

1758

01:14:44,390 --> 01:14:42,719

with the really huge black holes and you

1759

01:14:45,669 --> 01:14:44,400

know right near them are you ever going

1760

01:14:46,550 --> 01:14:45,679

to be able to actually get away with

1761

01:14:49,110 --> 01:14:46,560

going

1762

01:14:51,750 --> 01:14:49,120

significantly slower if you want to go

1763

01:14:53,350 --> 01:14:51,760

fast forward in time your best route is

1764

01:14:54,709 --> 01:14:53,360

probably just to have yourself frozen

1765

01:14:57,350 --> 01:14:54,719

and hope on the other end of that they

1766

01:14:59,350 --> 01:14:57,360

have the technology to resurrect you and

1767

01:15:01,030 --> 01:14:59,360

time travel and send you back home

1768

01:15:02,149 --> 01:15:01,040

but i think there's got to be at least a

1769

01:15:03,270 --> 01:15:02,159

few people who've already tried that

1770

01:15:04,790 --> 01:15:03,280

trick and they never seem to show up

1771

01:15:07,350 --> 01:15:04,800

here also probably not that particular

1772

01:15:09,189 --> 01:15:07,360

type of time driver being allowed

1773

01:15:11,590 --> 01:15:09,199

do you okay

1774

01:15:14,390 --> 01:15:11,600

just just put on your fun hat for a

1775

01:15:16,709 --> 01:15:14,400

second and i know that you have one

1776

01:15:19,350 --> 01:15:16,719

is it possible when we talk about

1777

01:15:21,189 --> 01:15:19,360

alternate timelines and everything else

1778

01:15:23,590 --> 01:15:21,199

do you think it might be possible that

1779

01:15:26,630 --> 01:15:23,600

some of these ghosts and these

1780

01:15:28,470 --> 01:15:26,640

interdimensional things uh that we see

1781

01:15:32,229 --> 01:15:28,480

uh from time to time

1782

01:15:34,470 --> 01:15:32,239

uh maybe time travelers uh observing us

1783

01:15:36,070 --> 01:15:34,480

yeah i mean that is it's it's easy to

1784

01:15:37,910 --> 01:15:36,080

say no on something like that i'm gonna

1785

01:15:39,510 --> 01:15:37,920

guess the answer probably is no but yeah

1786

01:15:40,790 --> 01:15:39,520

those are definitely options you know a

1787

01:15:43,270 --> 01:15:40,800

lot of people have seen a lot of strange

1788

01:15:45,750 --> 01:15:43,280

things and again

1789

01:15:47,350 --> 01:15:45,760

i i don't like to ever as a scientist

1790

01:15:48,470 --> 01:15:47,360

say oh yes that's what's happening right

1791

01:15:49,830 --> 01:15:48,480

the other hand i i do not like the

1792

01:15:51,430 --> 01:15:49,840

tendency or just be like oh no that

1793

01:15:53,910 --> 01:15:51,440

definitely isn't no no definitely not

1794

01:15:56,149 --> 01:15:53,920

that phenomena um anybody can just say

1795

01:15:57,830 --> 01:15:56,159

no about stuff like that we don't know

1796

01:15:59,350 --> 01:15:57,840

what these phenomena are probably a lot

1797

01:16:01,910 --> 01:15:59,360

of them are not what people are assuming

1798

01:16:03,750 --> 01:16:01,920

they are and a lot of them probably are

1799

01:16:05,270 --> 01:16:03,760

totally mundane but a lot of them maybe

1800

01:16:08,870 --> 01:16:05,280

aren't

1801
01:16:10,470 --> 01:16:08,880
the um there's a conversation let's stay

1802
01:16:13,590 --> 01:16:10,480
right here

1803
01:16:15,510 --> 01:16:13,600
um that seems to be bubbling to the

1804
01:16:17,669 --> 01:16:15,520
surface in

1805
01:16:18,709 --> 01:16:17,679
military circles

1806
01:16:20,630 --> 01:16:18,719
um

1807
01:16:23,110 --> 01:16:20,640
uh that

1808
01:16:24,310 --> 01:16:23,120
these objects not all of them but some

1809
01:16:26,790 --> 01:16:24,320
of them

1810
01:16:28,149 --> 01:16:26,800
uh these uaps

1811
01:16:30,950 --> 01:16:28,159
may be us

1812
01:16:33,430 --> 01:16:30,960
right maybe us from the future yeah and

1813
01:16:35,990 --> 01:16:33,440

that's that's a crazy conversation and

1814

01:16:38,470 --> 01:16:36,000

if the department of defense is suddenly

1815

01:16:40,470 --> 01:16:38,480

mentioning this as a possibility

1816

01:16:42,070 --> 01:16:40,480

do they know something that we don't i

1817

01:16:42,870 --> 01:16:42,080

mean could that

1818

01:16:45,750 --> 01:16:42,880

be

1819

01:16:47,189 --> 01:16:45,760

this part of the ufo phenomena

1820

01:16:48,709 --> 01:16:47,199

i never trust the department of defense

1821

01:16:52,790 --> 01:16:48,719

to know anything very long on its own

1822

01:16:54,229 --> 01:16:52,800

without leaking out but uh i it's

1823

01:16:55,590 --> 01:16:54,239

i have a lot of friends who work with

1824

01:16:56,709 --> 01:16:55,600

them and i feel like i'd probably know

1825

01:16:58,950 --> 01:16:56,719

if something like that specifically were

1826

01:17:01,669 --> 01:16:58,960

going on but at the same time yet i

1827

01:17:04,070 --> 01:17:01,679

can't remember what aeonflux the old tv

1828

01:17:06,470 --> 01:17:04,080

show on mtv aeon flux they're like last

1829

01:17:08,709 --> 01:17:06,480

episode they have some aliens that have

1830

01:17:10,870 --> 01:17:08,719

arrived and they find out later on in a

1831

01:17:12,950 --> 01:17:10,880

typically trippy episode that it wasn't

1832

01:17:15,270 --> 01:17:12,960

really aliens it was time travelers from

1833

01:17:16,550 --> 01:17:15,280

the future that they thought were aliens

1834

01:17:18,310 --> 01:17:16,560

there's another one for that period we

1835

01:17:19,910 --> 01:17:18,320

call it light years or in the us was

1836

01:17:21,430 --> 01:17:19,920

called ganda hall originally it's a film

1837

01:17:23,270 --> 01:17:21,440

where again they get the invasion

1838

01:17:25,990 --> 01:17:23,280

backward in time for themselves it's

1839

01:17:28,149 --> 01:17:26,000

aliens but that's what it is originally

1840

01:17:29,510 --> 01:17:28,159

and uh one of my upcoming episodes i do

1841

01:17:31,110 --> 01:17:29,520

a time travel episode every year and

1842

01:17:32,390 --> 01:17:31,120

sometimes this month we got the time

1843

01:17:35,270 --> 01:17:32,400

wars and alternate timelines won't

1844

01:17:37,270 --> 01:17:35,280

coming out and i say if in the future

1845

01:17:38,709 --> 01:17:37,280

i have a time machine what do i do do i

1846

01:17:40,149 --> 01:17:38,719

colonize you know i can travel to a

1847

01:17:42,470 --> 01:17:40,159

different multiverse like travel back in

1848

01:17:43,750 --> 01:17:42,480

time or i could travel to all the stars

1849

01:17:45,669 --> 01:17:43,760

you're never going to find an easy or

1850

01:17:47,270 --> 01:17:45,679

better place to colonize than a copy of

1851
01:17:49,510 --> 01:17:47,280
your planet where humans just never

1852
01:17:51,510 --> 01:17:49,520
arrived right which should be tons and

1853
01:17:53,910 --> 01:17:51,520
tons of them so why aren't you invading

1854
01:17:55,990 --> 01:17:53,920
backwards in time to some copy of your

1855
01:17:57,430 --> 01:17:56,000
plant that doesn't have life or just for

1856
01:17:58,709 --> 01:17:57,440
actually showed up say three million

1857
01:18:01,590 --> 01:17:58,719
years ago before there were humans

1858
01:18:03,590 --> 01:18:01,600
around apparently um you know that would

1859
01:18:05,350 --> 01:18:03,600
be the option you'd expect

1860
01:18:08,229 --> 01:18:05,360
and i won't spoil it because of a good

1861
01:18:10,790 --> 01:18:08,239
indie on that one but it tends to show

1862
01:18:13,830 --> 01:18:10,800
why even if you could pull this off

1863
01:18:16,149 --> 01:18:13,840

uh it would not work out very well

1864

01:18:18,390 --> 01:18:16,159

why is that that's a do-over right

1865

01:18:21,030 --> 01:18:18,400

that's a bona fide do-over

1866

01:18:22,709 --> 01:18:21,040

all right so i i might as well

1867

01:18:25,110 --> 01:18:22,719

tease people with it but let's say that

1868

01:18:26,709 --> 01:18:25,120

i go ahead and i go back in time and

1869

01:18:28,630 --> 01:18:26,719

there's a million different timelines in

1870

01:18:30,149 --> 01:18:28,640

the next second in which i either did or

1871

01:18:31,750 --> 01:18:30,159

didn't do that if i had the machine

1872

01:18:33,510 --> 01:18:31,760

right so let's say that there's

1873

01:18:34,950 --> 01:18:33,520

oh a few million where i just waited one

1874

01:18:37,030 --> 01:18:34,960

more second before i invaded back in

1875

01:18:38,390 --> 01:18:37,040

time right different versions of reality

1876

01:18:40,550 --> 01:18:38,400

and we all go back to the original time

1877

01:18:42,229 --> 01:18:40,560

you were planning to arrive at say 1

1878

01:18:44,070 --> 01:18:42,239

million years ago to invade the place

1879

01:18:46,310 --> 01:18:44,080

and take it over and we all arrive at

1880

01:18:47,830 --> 01:18:46,320

the same moment and each those timelines

1881

01:18:49,990 --> 01:18:47,840

would also have had us say bringing an

1882

01:18:51,830 --> 01:18:50,000

army back in time or fleets and these

1883

01:18:53,030 --> 01:18:51,840

exponentially increased so next moment

1884

01:18:55,030 --> 01:18:53,040

there's another billion of these

1885

01:18:56,470 --> 01:18:55,040

timelines and these are very tiny

1886

01:18:58,630 --> 01:18:56,480

numbers compared to reality but too

1887

01:19:00,709 --> 01:18:58,640

because there are trillions of timelines

1888

01:19:02,470 --> 01:19:00,719

just spun out for you even now second

1889

01:19:04,390 --> 01:19:02,480

correct so what ends up happening is you

1890

01:19:05,830 --> 01:19:04,400

would have if you can actually add

1891

01:19:08,310 --> 01:19:05,840

matter in the past you just walk through

1892

01:19:10,390 --> 01:19:08,320

yourself right and making that area more

1893

01:19:11,510 --> 01:19:10,400

massive there's now more mass

1894

01:19:15,030 --> 01:19:11,520

on the surface of that planet you're

1895

01:19:17,430 --> 01:19:15,040

invading well if 10 quadrillion of you

1896

01:19:19,830 --> 01:19:17,440

arrive with battle fleets and soldiers

1897

01:19:23,189 --> 01:19:19,840

to take over the past and add mass that

1898

01:19:24,709 --> 01:19:23,199

planet it turns into a black hole

1899

01:19:26,149 --> 01:19:24,719

so it might be one of those examples and

1900

01:19:27,669 --> 01:19:26,159

this happens a lot with time travel when

1901

01:19:30,229 --> 01:19:27,679

you follow it forward you know through

1902

01:19:31,830 --> 01:19:30,239

all the bits you find some unavoidable

1903

01:19:34,470 --> 01:19:31,840

paradox or problem you can't get around

1904

01:19:36,950 --> 01:19:34,480

to not exclusively but that one is even

1905

01:19:38,870 --> 01:19:36,960

if time travel walks you invade the past

1906

01:19:40,470 --> 01:19:38,880

to seize the best time for it and you

1907

01:19:42,870 --> 01:19:40,480

have so many people flooding back from

1908

01:19:45,189 --> 01:19:42,880

altered timelines in that place that you

1909

01:19:47,990 --> 01:19:45,199

collapse it as a black hole

1910

01:19:50,870 --> 01:19:48,000

okay i love this subject and let me tell

1911

01:19:53,669 --> 01:19:50,880

you why this is where to me

1912

01:19:55,110 --> 01:19:53,679

i'm just gonna piss off half of my

1913

01:19:56,709 --> 01:19:55,120

audience right now

1914

01:20:01,110 --> 01:19:56,719

this is where

1915

01:20:03,510 --> 01:20:01,120

uh star trek has got it completely wrong

1916

01:20:05,669 --> 01:20:03,520

and let me let me explain

1917

01:20:08,870 --> 01:20:05,679

because it doesn't make any sense if

1918

01:20:11,510 --> 01:20:08,880

you're if you're wart driving at the

1919

01:20:14,390 --> 01:20:11,520

speed of light all over the universe

1920

01:20:17,270 --> 01:20:14,400

you have no idea what point in time

1921

01:20:20,550 --> 01:20:17,280

you've left or have arrived in

1922

01:20:22,790 --> 01:20:20,560

and everybody else on those ships

1923

01:20:25,030 --> 01:20:22,800

right in the star fleet is doing the

1924

01:20:25,830 --> 01:20:25,040

exact same thing

1925

01:20:28,470 --> 01:20:25,840

so

1926

01:20:29,910 --> 01:20:28,480

you go and you split earth and you warp

1927

01:20:31,669 --> 01:20:29,920

drive out to

1928

01:20:33,110 --> 01:20:31,679

you know andromeda

1929

01:20:35,350 --> 01:20:33,120

and back

1930

01:20:36,629 --> 01:20:35,360

you're you're not arriving back when you

1931

01:20:39,270 --> 01:20:36,639

left

1932

01:20:41,189 --> 01:20:39,280

you're you're a half a million years off

1933

01:20:43,590 --> 01:20:41,199

right

1934

01:20:44,870 --> 01:20:43,600

and and it's this and if you're

1935

01:20:47,030 --> 01:20:44,880

here's the thing

1936

01:20:50,870 --> 01:20:47,040

you're doing it like this

1937

01:20:53,669 --> 01:20:50,880

all over a galaxy all the time how do

1938

01:20:56,070 --> 01:20:53,679

you even know where you are at

1939

01:20:57,990 --> 01:20:56,080

and it's something that's not addressed

1940

01:21:00,470 --> 01:20:58,000

where are you at at a point in time

1941

01:21:02,390 --> 01:21:00,480

after doing that for a month i do not

1942

01:21:04,229 --> 01:21:02,400

know how it is that star trek always had

1943

01:21:06,149 --> 01:21:04,239

their reputations the more scientific of

1944

01:21:07,270 --> 01:21:06,159

the of the sci-fi genre although they

1945

01:21:09,110 --> 01:21:07,280

are probably a little bit better about

1946

01:21:11,510 --> 01:21:09,120

the star wars or doctor who but a lot of

1947

01:21:12,950 --> 01:21:11,520

the science talk is just randomly made

1948

01:21:14,709 --> 01:21:12,960

up nonsense i love the show but i'll go

1949

01:21:16,149 --> 01:21:14,719

back and watch something like tng like i

1950

01:21:18,149 --> 01:21:16,159

have no idea what that you just made

1951

01:21:20,310 --> 01:21:18,159

that up that makes the quantum something

1952

01:21:21,750 --> 01:21:20,320

right it makes no sense but

1953

01:21:23,350 --> 01:21:21,760

one thing that we have to keep in mind

1954

01:21:25,350 --> 01:21:23,360

with these kind of time travel events is

1955

01:21:26,709 --> 01:21:25,360

exactly is that if you're traveling

1956

01:21:28,870 --> 01:21:26,719

faster than light you almost inevitably

1957

01:21:30,550 --> 01:21:28,880

time travel the the simple ones you say

1958

01:21:32,310 --> 01:21:30,560

you got the classic wormhole gates i

1959

01:21:33,990 --> 01:21:32,320

make two gates right next to each other

1960

01:21:35,030 --> 01:21:34,000

step through one i merge through the

1961

01:21:36,950 --> 01:21:35,040

other

1962

01:21:39,110 --> 01:21:36,960

now i take one of those into the

1963

01:21:41,430 --> 01:21:39,120

wormhole and i drag it up to very fast

1964

01:21:44,070 --> 01:21:41,440

speeds again time is going slower as i

1965

01:21:45,990 --> 01:21:44,080

move this thing so it's only experienced

1966

01:21:48,070 --> 01:21:46,000

say one year when i get to my

1967

01:21:49,830 --> 01:21:48,080

destination whereas back home two years

1968

01:21:51,830 --> 01:21:49,840

have passed that's correct through that

1969

01:21:53,830 --> 01:21:51,840

woman i emerged

1970

01:21:56,229 --> 01:21:53,840

one year in the future

1971

01:21:57,830 --> 01:21:56,239

whereas i left two years ago and if i

1972

01:22:00,870 --> 01:21:57,840

bring that one horse mouth back to where

1973

01:22:01,750 --> 01:22:00,880

i started off from i drink it there

1974

01:22:03,110 --> 01:22:01,760

right

1975

01:22:05,189 --> 01:22:03,120

and that because that's the specifically

1976

01:22:07,189 --> 01:22:05,199

is the close timelike core that we talk

1977

01:22:09,270 --> 01:22:07,199

about with einstein and the uh twin

1978

01:22:11,830 --> 01:22:09,280

paradoxes right now i can step in that

1979

01:22:13,990 --> 01:22:11,840

thing and i step back out two years ago

1980

01:22:16,070 --> 01:22:14,000

but i can only do that as long as the

1981

01:22:18,070 --> 01:22:16,080

mouth of the womb hold actually existed

1982

01:22:20,149 --> 01:22:18,080

this is allowed under general relativity

1983

01:22:21,430 --> 01:22:20,159

though as hawking said i think what's it

1984

01:22:23,590 --> 01:22:21,440

called um

1985

01:22:26,149 --> 01:22:23,600

the chronology project chronology

1986

01:22:27,510 --> 01:22:26,159

protection conjecture um

1987

01:22:29,030 --> 01:22:27,520

it was basically idea that even if

1988

01:22:30,870 --> 01:22:29,040

something allows time travel and general

1989

01:22:32,470 --> 01:22:30,880

relativity but if that violates the

1990

01:22:34,229 --> 01:22:32,480

other areas of physics which we know

1991

01:22:36,950 --> 01:22:34,239

better anyway doesn't necessarily mean

1992

01:22:38,229 --> 01:22:36,960

it happens and this is exactly a problem

1993

01:22:41,669 --> 01:22:38,239

with the wormholes or the closed

1994

01:22:43,510 --> 01:22:41,679

time-like loops is that you can do this

1995

01:22:46,229 --> 01:22:43,520

on paper you move that one whole mouth

1996

01:22:47,110 --> 01:22:46,239

and back again but it shouldn't actually

1997

01:22:48,550 --> 01:22:47,120

work

1998

01:22:50,229 --> 01:22:48,560

because then you have paradoxes really

1999

01:22:51,510 --> 01:22:50,239

people already doing this and if that's

2000

01:22:53,270 --> 01:22:51,520

the case then there must be something

2001

01:22:54,709 --> 01:22:53,280

that makes that impossible

2002

01:22:56,870 --> 01:22:54,719

well

2003

01:22:58,229 --> 01:22:56,880

i forget the physicist about 10 years

2004

01:23:02,229 --> 01:22:58,239

ago that

2005

01:23:04,149 --> 01:23:02,239

that laid out those numbers uh to move

2006

01:23:06,709 --> 01:23:04,159

the exit and the entrance of the

2007

01:23:07,990 --> 01:23:06,719

wormhole next to each other uh depending

2008

01:23:10,390 --> 01:23:08,000

on the size of the wormhole and the

2009

01:23:12,629 --> 01:23:10,400

length of it but you pass in you go into

2010

01:23:14,950 --> 01:23:12,639

the entrance you come out the other side

2011

01:23:16,950 --> 01:23:14,960

and you are younger all of the

2012

01:23:18,310 --> 01:23:16,960

synchronized watches and clocks you have

2013

01:23:20,870 --> 01:23:18,320

your witnesses

2014

01:23:23,189 --> 01:23:20,880

the watch on your hand doesn't change

2015

01:23:25,510 --> 01:23:23,199

you pass through the wormhole everything

2016

01:23:26,870 --> 01:23:25,520

is still synchronized but you come out

2017

01:23:30,629 --> 01:23:26,880

younger

2018

01:23:32,790 --> 01:23:30,639

here's the thing

2019

01:23:34,470 --> 01:23:32,800

do you come out of

2020

01:23:36,310 --> 01:23:34,480

the exit

2021

01:23:37,669 --> 01:23:36,320

younger which is fine and the math

2022

01:23:40,550 --> 01:23:37,679

supports this

2023

01:23:42,790 --> 01:23:40,560

um which is the astonishing thing but do

2024

01:23:44,390 --> 01:23:42,800

you come out with the memory

2025

01:23:46,229 --> 01:23:44,400

and the knowledge

2026

01:23:47,669 --> 01:23:46,239

that you went in with

2027

01:23:49,990 --> 01:23:47,679

no that's that

2028

01:23:52,070 --> 01:23:50,000

oh so

2029

01:23:53,669 --> 01:23:52,080

no everything i mean your memory to the

2030

01:23:55,110 --> 01:23:53,679

best on knowledge and again there's a

2031

01:23:56,870 --> 01:23:55,120

lot we don't know about the human mind

2032

01:23:58,709 --> 01:23:56,880

so maybe your memory is stored other

2033

01:24:00,870 --> 01:23:58,719

than just on neurons but if i just gone

2034

01:24:02,310 --> 01:24:00,880

back and move time backward for every

2035

01:24:03,990 --> 01:24:02,320

cell in your body every atom in your

2036

01:24:05,830 --> 01:24:04,000

body that includes your memory it

2037

01:24:07,830 --> 01:24:05,840

includes all the photons that hit your

2038

01:24:09,990 --> 01:24:07,840

neurons and so forth

2039

01:24:11,270 --> 01:24:10,000

so if you are de-aging somebody they

2040

01:24:13,350 --> 01:24:11,280

should be losing their memories unless

2041

01:24:15,110 --> 01:24:13,360

you're de-aging them by cellular or pale

2042

01:24:16,950 --> 01:24:15,120

which is not what time travel should do

2043

01:24:19,270 --> 01:24:16,960

you killed it for me again he's checking

2044

01:24:21,430 --> 01:24:19,280

out the romantic side of this because

2045

01:24:24,229 --> 01:24:21,440

isn't that what you would want to do

2046

01:24:26,629 --> 01:24:24,239

right repeat that a couple of times

2047

01:24:28,550 --> 01:24:26,639

you're acquiring knowledge right and you

2048

01:24:30,950 --> 01:24:28,560

come back out the younger version now

2049

01:24:34,390 --> 01:24:30,960

you're virtually immortal

2050

01:24:37,110 --> 01:24:34,400

again the clocks the what not

2051
01:24:39,750 --> 01:24:37,120
nothing is changing but you're becoming

2052
01:24:40,950 --> 01:24:39,760
younger well it's only fun if you get to

2053
01:24:41,830 --> 01:24:40,960
remember

2054
01:24:44,790 --> 01:24:41,840
uh

2055
01:24:47,750 --> 01:24:44,800
and retain your knowledge

2056
01:24:49,270 --> 01:24:47,760
um the very last episode of stargate sg1

2057
01:24:50,390 --> 01:24:49,280
they uh they're trying to figure out a

2058
01:24:52,790 --> 01:24:50,400
way why one of the characters isn't

2059
01:24:54,229 --> 01:24:52,800
supposed to age very uh quickly is uh

2060
01:24:56,229 --> 01:24:54,239
suddenly getting gray hair after 10

2061
01:24:57,750 --> 01:24:56,239
years on the show uh they all have a

2062
01:24:59,510 --> 01:24:57,760
they experienced 50 years in time and

2063
01:25:00,790 --> 01:24:59,520

then they have to d

2064

01:25:01,990 --> 01:25:00,800

you know go back in time to fix the

2065

01:25:04,709 --> 01:25:02,000

problem finally if they figure out how

2066

01:25:06,870 --> 01:25:04,719

the solution is and uh great episode too

2067

01:25:08,310 --> 01:25:06,880

it's one of the best closest sci-fi one

2068

01:25:10,790 --> 01:25:08,320

of them has to stay behind and remember

2069

01:25:12,310 --> 01:25:10,800

the whole thing and as to de-age and uh

2070

01:25:14,229 --> 01:25:12,320

it's him so he ends up with a gray hair

2071

01:25:16,070 --> 01:25:14,239

at the end of it that was teok and uh

2072

01:25:17,910 --> 01:25:16,080

for sg-1 fans i love that show as much

2073

01:25:19,590 --> 01:25:17,920

yeah that was that was a you're right

2074

01:25:20,870 --> 01:25:19,600

that was a great ender

2075

01:25:22,870 --> 01:25:20,880

okay

2076

01:25:24,229 --> 01:25:22,880

sg universe

2077

01:25:26,790 --> 01:25:24,239

was the best

2078

01:25:27,990 --> 01:25:26,800

it was good but it because it died two

2079

01:25:30,790 --> 01:25:28,000

seasons in

2080

01:25:32,310 --> 01:25:30,800

i you know i loved the entire franchise

2081

01:25:34,390 --> 01:25:32,320

uh but

2082

01:25:35,910 --> 01:25:34,400

i i really wish we got in another season

2083

01:25:37,830 --> 01:25:35,920

or two

2084

01:25:41,030 --> 01:25:37,840

and see this is the thing this is what's

2085

01:25:43,990 --> 01:25:41,040

messed up about uh stargate universe

2086

01:25:45,990 --> 01:25:44,000

um it was the perfect cliffhanger

2087

01:25:47,910 --> 01:25:46,000

it was the way to end the second season

2088

01:25:50,550 --> 01:25:47,920

for season three

2089

01:25:52,229 --> 01:25:50,560

and we didn't get it right that was

2090

01:25:54,709 --> 01:25:52,239

meant

2091

01:25:57,030 --> 01:25:54,719

and it they that was the best uh that

2092

01:25:59,270 --> 01:25:57,040

was the best uh computer generated

2093

01:26:00,709 --> 01:25:59,280

graphics that was uh some of the best

2094

01:26:03,030 --> 01:26:00,719

script writing

2095

01:26:05,669 --> 01:26:03,040

um it was it does it didn't have the

2096

01:26:08,629 --> 01:26:05,679

cheesy tv factor in its production i

2097

01:26:10,070 --> 01:26:08,639

mean it was really it felt high budget

2098

01:26:11,750 --> 01:26:10,080

yeah yeah i think

2099

01:26:12,870 --> 01:26:11,760

it's a great interface season two you

2100

01:26:15,750 --> 01:26:12,880

know you might be getting cancelled

2101
01:26:17,270 --> 01:26:15,760
because the order blake seven rule is uh

2102
01:26:19,189 --> 01:26:17,280
you can always bring it back uh

2103
01:26:20,950 --> 01:26:19,199
afterwards they all died in stasis so

2104
01:26:22,709 --> 01:26:20,960
whoever doesn't want to come back either

2105
01:26:25,030 --> 01:26:22,719
a uh well we saw this show back up 10

2106
01:26:26,390 --> 01:26:25,040
years later oh the live support tubes

2107
01:26:27,830 --> 01:26:26,400
which is already established in this you

2108
01:26:29,510 --> 01:26:27,840
know talking universe

2109
01:26:30,870 --> 01:26:29,520
did parsley malfunction half of them

2110
01:26:32,950 --> 01:26:30,880
died the ones that will come back and

2111
01:26:34,310 --> 01:26:32,960
the rest of you have aged so you've also

2112
01:26:35,270 --> 01:26:34,320
put on weight for some reason but that's

2113
01:26:36,470 --> 01:26:35,280

what it is

2114

01:26:39,590 --> 01:26:36,480

right right

2115

01:26:41,590 --> 01:26:39,600

and and and this was the crazy thing i

2116

01:26:43,030 --> 01:26:41,600

mean the season three would have written

2117

01:26:47,270 --> 01:26:43,040

itself

2118

01:26:49,430 --> 01:26:47,280

the whole point of sg universe was they

2119

01:26:51,350 --> 01:26:49,440

were chasing down a signal at the

2120

01:26:53,189 --> 01:26:51,360

beginning of everything right and that

2121

01:26:55,350 --> 01:26:53,199

was the journey they're trying to get to

2122

01:26:56,149 --> 01:26:55,360

the signal to see who is sending it

2123

01:26:59,270 --> 01:26:56,159

right

2124

01:27:01,350 --> 01:26:59,280

it's it's easy it writes itself let's go

2125

01:27:04,470 --> 01:27:01,360

get season three done

2126
01:27:06,470 --> 01:27:04,480
and and resolve it but i wanted to know

2127
01:27:08,470 --> 01:27:06,480
what what that signal was it was and

2128
01:27:10,310 --> 01:27:08,480
that was great and it's the other part

2129
01:27:13,350 --> 01:27:10,320
and we've got to move on

2130
01:27:15,990 --> 01:27:13,360
this ship if you remember

2131
01:27:18,709 --> 01:27:16,000
on the back part of the ship was a mayan

2132
01:27:21,430 --> 01:27:18,719
pyramid

2133
01:27:23,430 --> 01:27:21,440
you don't remember that i'm kind of yeah

2134
01:27:27,110 --> 01:27:23,440
there was wasn't there yeah yeah it was

2135
01:27:31,110 --> 01:27:27,120
a thing it was my impairment now how

2136
01:27:33,510 --> 01:27:31,120
important is it uh to have and this is

2137
01:27:35,750 --> 01:27:33,520
uh the next segment we're doing a setup

2138
01:27:37,110 --> 01:27:35,760

how important is it to have somebody

2139

01:27:40,709 --> 01:27:37,120

like you

2140

01:27:43,510 --> 01:27:40,719

um and other scientific minds

2141

01:27:46,390 --> 01:27:43,520

professionals uh to

2142

01:27:49,189 --> 01:27:46,400

to help with uh

2143

01:27:52,070 --> 01:27:49,199

the the facts in the case uh like kip

2144

01:27:53,350 --> 01:27:52,080

thorne in interstellar

2145

01:27:57,110 --> 01:27:53,360

to

2146

01:27:58,310 --> 01:27:57,120

four video games four books uh four

2147

01:28:01,430 --> 01:27:58,320

movies

2148

01:28:03,830 --> 01:28:01,440

um i think that we are smarter now as an

2149

01:28:06,550 --> 01:28:03,840

audience and i think we're okay with

2150

01:28:08,550 --> 01:28:06,560

digesting the science now so let's try

2151

01:28:10,229 --> 01:28:08,560

to keep it on point how important is

2152

01:28:12,390 --> 01:28:10,239

that i mean that's part of the things

2153

01:28:14,950 --> 01:28:12,400

that that you actually do i mean given

2154

01:28:16,229 --> 01:28:14,960

that i started the show kind of as a uh

2155

01:28:17,990 --> 01:28:16,239

not with any intention returning to a

2156

01:28:19,910 --> 01:28:18,000

show as a kind of uh here some

2157

01:28:21,110 --> 01:28:19,920

interesting ideas for sci-fi writers

2158

01:28:23,030 --> 01:28:21,120

i've been talking to at the time so i'd

2159

01:28:24,950 --> 01:28:23,040

have to keep repeating myself tomorrow i

2160

01:28:26,950 --> 01:28:24,960

would say it's very very important

2161

01:28:28,950 --> 01:28:26,960

however i would also say that

2162

01:28:30,790 --> 01:28:28,960

the most important things about writing

2163

01:28:32,070 --> 01:28:30,800

sci-fi this force like anything the

2164

01:28:33,669 --> 01:28:32,080

story's got to be mostly about the

2165

01:28:35,189 --> 01:28:33,679

characters if your plot and your

2166

01:28:36,709 --> 01:28:35,199

characters don't work it doesn't matter

2167

01:28:39,030 --> 01:28:36,719

how good you are it should never be

2168

01:28:40,390 --> 01:28:39,040

about exposition and second on the end

2169

01:28:41,990 --> 01:28:40,400

of that is that

2170

01:28:44,149 --> 01:28:42,000

people want whatever you're telling them

2171

01:28:46,790 --> 01:28:44,159

to either be flagged as saying this is

2172

01:28:48,390 --> 01:28:46,800

the sci-fi part or they want you to do

2173

01:28:50,550 --> 01:28:48,400

your research it doesn't have to be

2174

01:28:52,790 --> 01:28:50,560

about physics you'll be doing the entire

2175

01:28:54,950 --> 01:28:52,800

one on metallurgy or psychology these

2176

01:28:57,030 --> 01:28:54,960

are good sci-fi topics

2177

01:28:58,629 --> 01:28:57,040

whatever you decide to go in depth on

2178

01:29:01,110 --> 01:28:58,639

and people like a little bit of real

2179

01:29:02,709 --> 01:29:01,120

science in depth in their sci-fi do it

2180

01:29:04,629 --> 01:29:02,719

right you know it doesn't have to

2181

01:29:06,310 --> 01:29:04,639

overwhelm everything but make sure

2182

01:29:08,229 --> 01:29:06,320

you're right on that topic if you choose

2183

01:29:10,229 --> 01:29:08,239

to delve into it at all

2184

01:29:11,750 --> 01:29:10,239

make it right uh all the other stuff

2185

01:29:13,189 --> 01:29:11,760

though yeah you get a lot of bends and

2186

01:29:15,270 --> 01:29:13,199

stuff i mean like i love the movie

2187

01:29:18,629 --> 01:29:15,280

inception uh same guy who did it in

2188

01:29:20,709 --> 01:29:18,639

stella and the science of that is bad

2189

01:29:22,629 --> 01:29:20,719

that's not how the brain works but it's

2190

01:29:25,030 --> 01:29:22,639

a great movie you know obviously i

2191

01:29:27,270 --> 01:29:25,040

thought it was a great movie and uh what

2192

01:29:28,470 --> 01:29:27,280

would you think about uh

2193

01:29:34,709 --> 01:29:28,480

uh

2194

01:29:36,149 --> 01:29:34,719

and the the the new doctor strange

2195

01:29:38,709 --> 01:29:36,159

multiverse

2196

01:29:40,870 --> 01:29:38,719

um where

2197

01:29:42,310 --> 01:29:40,880

there was elements of science in both of

2198

01:29:44,390 --> 01:29:42,320

them there was more and everything

2199

01:29:45,750 --> 01:29:44,400

everywhere all at once

2200

01:29:47,110 --> 01:29:45,760

but uh

2201
01:29:48,629 --> 01:29:47,120
what did you make of that and do you

2202
01:29:49,669 --> 01:29:48,639
think that these kinds of things are

2203
01:29:50,870 --> 01:29:49,679
possible

2204
01:29:53,830 --> 01:29:50,880
i mean

2205
01:29:56,149 --> 01:29:53,840
with doctor strange probably not i i'm a

2206
01:29:58,550 --> 01:29:56,159
huge marvel comics fan since long before

2207
01:29:59,750 --> 01:29:58,560
the mcu uh but i can't say long before

2208
01:30:02,629 --> 01:29:59,760
it's been back in the 40s they've been

2209
01:30:04,870 --> 01:30:02,639
around but uh since the 90s i've loved

2210
01:30:06,550 --> 01:30:04,880
marvel comics and uh they never really

2211
01:30:07,990 --> 01:30:06,560
do the science very well but they're a

2212
01:30:10,229 --> 01:30:08,000
great example of that sheer complexity

2213
01:30:11,110 --> 01:30:10,239

of ward building where even though you

2214

01:30:12,550 --> 01:30:11,120

know as soon as you keep your

2215

01:30:14,790 --> 01:30:12,560

established cannon inside the thing

2216

01:30:17,270 --> 01:30:14,800

reasonably well same with like star wars

2217

01:30:19,189 --> 01:30:17,280

the legendary legends universe or

2218

01:30:20,390 --> 01:30:19,199

warhammer 40k or a bunch of other huge

2219

01:30:23,110 --> 01:30:20,400

franchises

2220

01:30:24,950 --> 01:30:23,120

they are amazing for their own depth and

2221

01:30:26,229 --> 01:30:24,960

consistency it doesn't really matter

2222

01:30:27,669 --> 01:30:26,239

that much that they mess up on the

2223

01:30:30,229 --> 01:30:27,679

science a lot or just make it up as they

2224

01:30:31,910 --> 01:30:30,239

go they are consistent inside themselves

2225

01:30:33,430 --> 01:30:31,920

and uh that's probably the most

2226

01:30:35,350 --> 01:30:33,440

important thing you say if your science

2227

01:30:37,750 --> 01:30:35,360

is bad and people don't like your first

2228

01:30:39,910 --> 01:30:37,760

book or whatever it is then that's what

2229

01:30:42,709 --> 01:30:39,920

happened right if on the other hand your

2230

01:30:44,310 --> 01:30:42,719

work was so well and popular that people

2231

01:30:46,550 --> 01:30:44,320

have time to dissect it because they

2232

01:30:48,709 --> 01:30:46,560

want sequels then there's a way called

2233

01:30:50,070 --> 01:30:48,719

success here which you can you can go

2234

01:30:51,510 --> 01:30:50,080

ahead and fix them up afterwards because

2235

01:30:53,270 --> 01:30:51,520

you obviously did something that was so

2236

01:30:55,030 --> 01:30:53,280

good that people don't really mind it

2237

01:30:57,030 --> 01:30:55,040

you know you don't watch flash gordon or

2238

01:30:58,629 --> 01:30:57,040

star wars because you're looking for

2239

01:31:01,430 --> 01:30:58,639

great science

2240

01:31:03,510 --> 01:31:01,440

flash gordon okay you need to slow down

2241

01:31:05,590 --> 01:31:03,520

now you need to pump the brakes

2242

01:31:09,189 --> 01:31:05,600

gordon was science fact

2243

01:31:14,870 --> 01:31:12,390

and uh but but but here's the thing

2244

01:31:17,430 --> 01:31:14,880

uh and we've got to take a break

2245

01:31:20,550 --> 01:31:17,440

in and dr strange

2246

01:31:23,030 --> 01:31:20,560

it was nothing but a string of paradoxes

2247

01:31:26,310 --> 01:31:23,040

that absolutely made everything

2248

01:31:28,229 --> 01:31:26,320

impossible it was ignored and you kind

2249

01:31:29,110 --> 01:31:28,239

of have to do that as a viewer you have

2250

01:31:31,110 --> 01:31:29,120

to

2251

01:31:33,350 --> 01:31:31,120

just you know some things you just have

2252

01:31:35,350 --> 01:31:33,360

to let rinse down the drain and and

2253

01:31:37,270 --> 01:31:35,360

concentrate on it but everything

2254

01:31:40,629 --> 01:31:37,280

everywhere all at once was the opposite

2255

01:31:43,270 --> 01:31:40,639

of that i felt that uh the paradox issue

2256

01:31:45,430 --> 01:31:43,280

was completely avoided which made it a

2257

01:31:47,510 --> 01:31:45,440

little bit more uh believable from a

2258

01:31:49,030 --> 01:31:47,520

scientific uh standpoint

2259

01:31:50,470 --> 01:31:49,040

i've not seen it

2260

01:31:52,550 --> 01:31:50,480

what

2261

01:31:54,950 --> 01:31:52,560

i've not seen that

2262

01:31:57,750 --> 01:31:54,960

i'm always behind on things

2263

01:31:59,830 --> 01:31:57,760

i've seen doctor strange but

2264

01:32:02,070 --> 01:31:59,840

our break right here so i can scold

2265

01:32:04,310 --> 01:32:02,080

isaac during the break this is fade to

2266

01:32:07,110 --> 01:32:04,320

black i'm yours jimmy church tonight

2267

01:32:09,189 --> 01:32:07,120

isaac arthur and time travel we'll be

2268

01:32:11,430 --> 01:32:09,199

right back after this short break on the

2269

01:32:13,110 --> 01:32:11,440

game changer and on x networks i'm here

2270

01:32:15,760 --> 01:32:13,120

with jimmy church stay with us we'll be

2271

01:32:23,290 --> 01:32:15,770

right back

2272

01:32:23,300 --> 01:32:44,149

[Music]

2273

01:32:49,830 --> 01:32:46,390

this is fade to black with jimmy church

2274

01:32:51,350 --> 01:32:49,840

on the game changer radio network

2275

01:32:53,830 --> 01:32:51,360

[Music]

2276

01:32:57,270 --> 01:32:53,840

your 1 million gigawatt paranormal

2277

01:32:59,669 --> 01:32:57,280

powerhouse kumx db

2278

01:33:01,750 --> 01:32:59,679

vx

2279

01:33:04,870 --> 01:33:01,760

hello fader knots jimmy church here

2280

01:33:07,189 --> 01:33:04,880

you've seen me with my thunderstorm now

2281

01:33:09,430 --> 01:33:07,199

you can purify the air in your home and

2282

01:33:11,750 --> 01:33:09,440

get healthy clean fresh smelling air and

2283

01:33:13,669 --> 01:33:11,760

eliminate odors just like i do right

2284

01:33:16,229 --> 01:33:13,679

here in the bunker the eden pier

2285

01:33:18,790 --> 01:33:16,239

thunderstorm uses oxy technology that

2286

01:33:21,030 --> 01:33:18,800

naturally sends out o3 molecules into

2287

01:33:23,350 --> 01:33:21,040

the air which seek out odors and air

2288

01:33:25,910 --> 01:33:23,360

pollutants in your home and destroys

2289

01:33:28,470 --> 01:33:25,920

them it's called a thunderstorm because

2290

01:33:30,950 --> 01:33:28,480

it purifies the air just like after a

2291

01:33:32,629 --> 01:33:30,960

thunderstorm and right now you can save

2292

01:33:35,510 --> 01:33:32,639

two hundred dollars on an eden pier

2293

01:33:37,750 --> 01:33:35,520

thunderstorm three pack for whole home

2294

01:33:39,590 --> 01:33:37,760

protection with this special offer

2295

01:33:41,110 --> 01:33:39,600

you're getting three units for under

2296

01:33:42,470 --> 01:33:41,120

200.

2297

01:33:43,470 --> 01:33:42,480

seriously

2298

01:33:47,189 --> 01:33:43,480

go to

2299

01:33:49,750 --> 01:33:47,199

edenpuredeals.com and use fader 3

2300

01:33:52,390 --> 01:33:49,760

shipping is free and it's easy just

2301
01:33:53,270 --> 01:33:52,400
scroll down you'll see my name right

2302
01:33:56,390 --> 01:33:53,280
there

2303
01:34:02,470 --> 01:33:56,400
jimmy church click on it and get your

2304
01:34:06,709 --> 01:34:04,709
this is billy carson founder and ceo of

2305
01:34:09,030 --> 01:34:06,719
forbidden knowledge dot tv forbidden

2306
01:34:10,790 --> 01:34:09,040
knowledge dot tv is the fastest growing

2307
01:34:12,629 --> 01:34:10,800
and one of the most watched networks in

2308
01:34:14,310 --> 01:34:12,639
the world and i would like to personally

2309
01:34:17,110 --> 01:34:14,320
invite you to check out our expanding

2310
01:34:19,350 --> 01:34:17,120
library of tv film lectures and special

2311
01:34:21,910 --> 01:34:19,360
presentations forbidden knowledge dot tv

2312
01:34:24,629 --> 01:34:21,920
has over 6 000 videos covering lost

2313
01:34:26,470 --> 01:34:24,639

history health ufos spirituality and our

2314

01:34:28,709 --> 01:34:26,480

future we are committed to our community

2315

01:34:31,189 --> 01:34:28,719

and with my personal invitation you can

2316

01:34:33,830 --> 01:34:31,199

right now get your own free 30-day

2317

01:34:36,149 --> 01:34:33,840

membership at forbidden knowledge dot tv

2318

01:34:40,790 --> 01:34:36,159

your own library of information starts

2319

01:34:45,030 --> 01:34:42,870

because you never got that pony you

2320

01:34:46,709 --> 01:34:45,040

always wanted

2321

01:34:49,109 --> 01:34:46,719

damn it

2322

01:34:51,990 --> 01:34:49,119

jimmy church and fade to black on the

2323

01:34:55,189 --> 01:34:52,000

game changer network

2324

01:34:57,590 --> 01:34:55,199

listen i know and you know that you've

2325

01:34:59,750 --> 01:34:57,600

always wanted your first crystal skull

2326

01:35:01,910 --> 01:34:59,760

or maybe you're a collector just like me

2327

01:35:03,750 --> 01:35:01,920

but you just don't know where to go to

2328

01:35:06,470 --> 01:35:03,760

find the real thing

2329

01:35:09,270 --> 01:35:06,480

then i met carolyn ford over at einstein

2330

01:35:11,350 --> 01:35:09,280

the crystalskull.com carolyn is the

2331

01:35:13,590 --> 01:35:11,360

guardian of einstein one of the most

2332

01:35:14,390 --> 01:35:13,600

respected ancient crystal skulls in the

2333

01:35:16,070 --> 01:35:14,400

world

2334

01:35:18,310 --> 01:35:16,080

all of her unique skulls have been

2335

01:35:20,229 --> 01:35:18,320

imprinted sitting with einstein in his

2336

01:35:23,189 --> 01:35:20,239

sacred lodge and are carved from the

2337

01:35:25,350 --> 01:35:23,199

finest gemstone and materials imprinting

2338

01:35:27,990 --> 01:35:25,360

is the process of receiving the ancient

2339

01:35:31,109 --> 01:35:28,000

wisdom from the master skull or master

2340

01:35:33,030 --> 01:35:31,119

computer einstein the ancient crystal

2341

01:35:35,109 --> 01:35:33,040

skull to see carolyn's current

2342

01:35:37,350 --> 01:35:35,119

collection of crystal skulls just visit

2343

01:35:40,070 --> 01:35:37,360

her store at einstein the crystal

2344

01:35:42,390 --> 01:35:40,080

skull.com click on the banner over on

2345

01:35:45,590 --> 01:35:42,400

our site don't forget to use the promo

2346

01:35:48,629 --> 01:35:45,600

code jimmy at checkout to receive 10 off

2347

01:35:51,189 --> 01:35:48,639

of your order today that's promo code

2348

01:35:54,149 --> 01:35:51,199

jimmy finding your first or next crystal

2349

01:36:02,400 --> 01:35:54,159

skull is easy just visit einstein the

2350

01:36:02,410 --> 01:36:05,750

[Music]

2351
01:36:11,750 --> 01:36:07,830
and you're listening to my good friend

2352
01:36:14,910 --> 01:36:11,760
jimmy church fade to black

2353
01:36:17,590 --> 01:36:14,920
this is toby kebble you're listening to

2354
01:36:20,229 --> 01:36:17,600
jimmychurchradio.com don't hurt me jimmy

2355
01:36:22,070 --> 01:36:20,239
i'm only little hey i'm adrian grenier

2356
01:36:24,220 --> 01:36:22,080
and this is ari gold we're the honey

2357
01:36:32,870 --> 01:36:24,230
brothers

2358
01:36:34,390 --> 01:36:32,880
and you're listening to jimmy church a

2359
01:36:36,070 --> 01:36:34,400
revolution

2360
01:36:38,310 --> 01:36:36,080
this is jimmy church of fade to black

2361
01:36:41,270 --> 01:36:38,320
and you can become an official fader not

2362
01:36:44,629 --> 01:36:41,280
by just going to our membership section

2363
01:36:49,030 --> 01:36:46,709

hello this is serena wright taylor from

2364

01:36:51,350 --> 01:36:49,040

conscious life expo and you're listening

2365

01:36:53,750 --> 01:36:51,360

to fade to black with jimmy church who

2366

01:36:56,950 --> 01:36:53,760

holds the lucky pony record for the best

2367

01:36:59,189 --> 01:36:56,960

astrological chart since 1963.

2368

01:37:00,870 --> 01:36:59,199

true story

2369

01:37:02,470 --> 01:37:00,880

this is micah hanks of the graelian

2370

01:37:13,820 --> 01:37:02,480

report and you're listening to jimmy

2371

01:37:13,830 --> 01:37:24,709

[Music]

2372

01:37:28,629 --> 01:37:26,709

welcome back fade to black i am your

2373

01:37:30,550 --> 01:37:28,639

host jimmy church tonight time travel

2374

01:37:33,109 --> 01:37:30,560

with isaac arthur

2375

01:37:34,870 --> 01:37:33,119

what a great conversation tonight and in

2376

01:37:36,390 --> 01:37:34,880

a lot of respects we're just getting

2377

01:37:39,270 --> 01:37:36,400

started

2378

01:37:40,550 --> 01:37:39,280

just kicking this thing off there is so

2379

01:37:43,030 --> 01:37:40,560

many

2380

01:37:45,030 --> 01:37:43,040

uh avenues uh that you can travel down

2381

01:37:45,830 --> 01:37:45,040

with time travel and

2382

01:37:48,229 --> 01:37:45,840

uh

2383

01:37:50,310 --> 01:37:48,239

this is and and here's the thing um

2384

01:37:51,590 --> 01:37:50,320

isaac as as

2385

01:37:54,470 --> 01:37:51,600

uh

2386

01:37:55,910 --> 01:37:54,480

as as we spider i keep saying spiderweb

2387

01:37:57,830 --> 01:37:55,920

because

2388

01:37:59,590 --> 01:37:57,840

when it comes to time travel i can go in

2389

01:38:03,430 --> 01:37:59,600

any direction right now

2390

01:38:05,990 --> 01:38:03,440

and one of the literally um there's a

2391

01:38:07,270 --> 01:38:06,000

couple of things i want to suggest one

2392

01:38:09,590 --> 01:38:07,280

if we

2393

01:38:12,470 --> 01:38:09,600

look at and talk about the fabric of

2394

01:38:14,470 --> 01:38:12,480

space and then we bring in space

2395

01:38:16,629 --> 01:38:14,480

um and and

2396

01:38:19,109 --> 01:38:16,639

and a mass in space

2397

01:38:20,950 --> 01:38:19,119

most people uh

2398

01:38:23,990 --> 01:38:20,960

envision

2399

01:38:25,030 --> 01:38:24,000

uh another planet another star something

2400

01:38:27,669 --> 01:38:25,040

out there

2401

01:38:29,109 --> 01:38:27,679

the same thing applies

2402

01:38:31,270 --> 01:38:29,119

right here

2403

01:38:32,629 --> 01:38:31,280

right the earth the last time i check

2404

01:38:36,310 --> 01:38:32,639

has mass

2405

01:38:37,109 --> 01:38:36,320

and uh and so does our sun

2406

01:38:38,950 --> 01:38:37,119

now

2407

01:38:40,070 --> 01:38:38,960

would that suggest

2408

01:38:41,030 --> 01:38:40,080

uh

2409

01:38:47,830 --> 01:38:41,040

that

2410

01:38:49,430 --> 01:38:47,840

wouldn't it have to wouldn't these same

2411

01:38:52,629 --> 01:38:49,440

applications

2412

01:38:53,669 --> 01:38:52,639

that einstein presented to us applies

2413

01:38:55,990 --> 01:38:53,679

here

2414

01:38:59,830 --> 01:38:56,000

and we've got the moon we've got mars

2415

01:39:02,709 --> 01:38:59,840

we've got a look at jupiter is is pretty

2416

01:39:06,629 --> 01:39:02,719

dang big the last time i checked right

2417

01:39:07,590 --> 01:39:06,639

so it does space time get affected

2418

01:39:08,550 --> 01:39:07,600

here

2419

01:39:10,149 --> 01:39:08,560

yes

2420

01:39:11,669 --> 01:39:10,159

absolutely we've we've checked this with

2421

01:39:14,070 --> 01:39:11,679

experiments as simple as putting two

2422

01:39:16,149 --> 01:39:14,080

atomic clocks one at a higher shelf than

2423

01:39:18,149 --> 01:39:16,159

the other so it has less gravity on it

2424

01:39:20,470 --> 01:39:18,159

um you know they're very tiny change but

2425

01:39:22,310 --> 01:39:20,480

it's there the it has to do with how

2426

01:39:24,390 --> 01:39:22,320

much and again that escape velocity and

2427

01:39:25,910 --> 01:39:24,400

algae i used for earlier the time runs

2428

01:39:27,350 --> 01:39:25,920

slower here on the surface of earth it

2429

01:39:28,790 --> 01:39:27,360

runs at different speeds whether you're

2430

01:39:31,750 --> 01:39:28,800

on top of a mountain at the equator

2431

01:39:33,750 --> 01:39:31,760

versus at the poles it runs slower the

2432

01:39:35,189 --> 01:39:33,760

deeper down you all if you're in salt

2433

01:39:38,390 --> 01:39:35,199

lake i'm sorry not salt lake so the

2434

01:39:39,750 --> 01:39:38,400

death valley or um that the

2435

01:39:40,870 --> 01:39:39,760

dead sea it's gonna run a little bit

2436

01:39:43,350 --> 01:39:40,880

slower there than we're on top of

2437

01:39:45,430 --> 01:39:43,360

everest it runs slower as you get

2438

01:39:46,790 --> 01:39:45,440

towards the sun which has even more mass

2439

01:39:48,470 --> 01:39:46,800

uh if you're at the center of the sun

2440

01:39:50,390 --> 01:39:48,480

that would be the slowest place in this

2441

01:39:52,390 --> 01:39:50,400

solar system for time

2442

01:39:54,149 --> 01:39:52,400

um it's inside of earth it runs slower

2443

01:39:55,910 --> 01:39:54,159

too even though there's no gravity right

2444

01:39:57,669 --> 01:39:55,920

there because it's balanced out

2445

01:39:59,430 --> 01:39:57,679

um it has to do with how much energy you

2446

01:40:00,950 --> 01:39:59,440

need to leave the spot closer you get to

2447

01:40:02,229 --> 01:40:00,960

the center of the galaxy it slows down

2448

01:40:04,470 --> 01:40:02,239

even before you get to the center where

2449

01:40:05,270 --> 01:40:04,480

the actual sagittarius a black hole is

2450

01:40:06,390 --> 01:40:05,280

at

2451

01:40:07,990 --> 01:40:06,400

um

2452

01:40:10,390 --> 01:40:08,000

you get outside the edge of the galaxy

2453

01:40:12,149 --> 01:40:10,400

time runs fastest uh except in the

2454

01:40:14,950 --> 01:40:12,159

cosmic voids where things are really

2455

01:40:17,189 --> 01:40:14,960

empty that's where time runs closest to

2456

01:40:19,030 --> 01:40:17,199

flat right and yet the difference is

2457

01:40:19,990 --> 01:40:19,040

still pretty small you know we're

2458

01:40:22,390 --> 01:40:20,000

talking

2459

01:40:25,350 --> 01:40:22,400

seconds on a year kind of thing

2460

01:40:28,310 --> 01:40:25,360

now if i get on the phone

2461

01:40:29,189 --> 01:40:28,320

with a friend of mine in australia right

2462

01:40:31,910 --> 01:40:29,199

now

2463

01:40:34,149 --> 01:40:31,920

they are at tomorrow

2464

01:40:37,030 --> 01:40:34,159

okay all right

2465

01:40:40,390 --> 01:40:37,040

yes they are they're at tomorrow they

2466

01:40:41,750 --> 01:40:40,400

it is right now august 4th in in

2467

01:40:43,189 --> 01:40:41,760

australia

2468

01:40:44,149 --> 01:40:43,199

so

2469

01:40:46,950 --> 01:40:44,159

why

2470

01:40:49,350 --> 01:40:46,960

can't we i this is not a doofus question

2471

01:40:51,750 --> 01:40:49,360

we've all wondered this

2472

01:40:54,470 --> 01:40:51,760

why can't we get on a plane fly

2473

01:40:55,910 --> 01:40:54,480

backwards against the grain and go to

2474

01:40:57,590 --> 01:40:55,920

last week

2475

01:40:59,750 --> 01:40:57,600

well it's uh it's completing two

2476

01:41:01,430 --> 01:40:59,760

concepts there the one is where we set

2477

01:41:02,790 --> 01:41:01,440

the clock for the day based off where

2478

01:41:05,030 --> 01:41:02,800

the sun's at in the sky we have a

2479

01:41:08,070 --> 01:41:05,040

universal time code that we use it's

2480

01:41:09,910 --> 01:41:08,080

based off of gmt time that's utc and

2481

01:41:11,910 --> 01:41:09,920

that's the same for everybody right but

2482

01:41:13,030 --> 01:41:11,920

uh where it is concerned for australia

2483

01:41:15,109 --> 01:41:13,040

that's just where you're basing when

2484

01:41:17,109 --> 01:41:15,119

does the day change officially based on

2485

01:41:18,229 --> 01:41:17,119

when noon is and most people don't tend

2486

01:41:19,590 --> 01:41:18,239

to think about it if you look at your

2487

01:41:21,510 --> 01:41:19,600

typical in the united states right now

2488

01:41:23,030 --> 01:41:21,520

we're in daylight savings hour if you

2489

01:41:24,790 --> 01:41:23,040

look at sundial you're probably not

2490

01:41:25,830 --> 01:41:24,800

going to notice it actually being south

2491

01:41:27,590 --> 01:41:25,840

at noon

2492

01:41:28,950 --> 01:41:27,600

uh and then where you are based in your

2493

01:41:31,189 --> 01:41:28,960

time zone is not going to be it will

2494

01:41:32,709 --> 01:41:31,199

move it too like new york versus ohio at

2495

01:41:34,470 --> 01:41:32,719

noon is not going to have the same

2496

01:41:36,790 --> 01:41:34,480

position of that shadow

2497

01:41:38,149 --> 01:41:36,800

but that in that case is can i just fly

2498

01:41:39,830 --> 01:41:38,159

around the world really fast like

2499

01:41:41,990 --> 01:41:39,840

superman backwards and just keep going

2500

01:41:43,510 --> 01:41:42,000

through time zones if i say that that

2501
01:41:45,590 --> 01:41:43,520
one doesn't work now if you could go

2502
01:41:47,669 --> 01:41:45,600
faster than the speed of light

2503
01:41:49,590 --> 01:41:47,679
then yes that that would do that

2504
01:41:52,070 --> 01:41:49,600
mathematically you would go backwards in

2505
01:41:53,750 --> 01:41:52,080
time but you just go much slower you go

2506
01:41:55,510 --> 01:41:53,760
slower and slower and slower till time

2507
01:41:57,350 --> 01:41:55,520
stopped and then you went faster it

2508
01:41:58,229 --> 01:41:57,360
would start going in reverse

2509
01:41:58,950 --> 01:41:58,239
um

2510
01:42:01,189 --> 01:41:58,960
now

2511
01:42:03,430 --> 01:42:01,199
if if if i

2512
01:42:06,550 --> 01:42:03,440
if i had all the money in the world

2513
01:42:09,510 --> 01:42:06,560

and and i lease a private jet on my

2514

01:42:12,229 --> 01:42:09,520

birthday and i go back against the grain

2515

01:42:16,390 --> 01:42:12,239

into into all of the time zones and i

2516

01:42:19,750 --> 01:42:16,400

celebrate my birthday at at midnight in

2517

01:42:21,990 --> 01:42:19,760

each time zone when it's my birthday

2518

01:42:22,870 --> 01:42:22,000

and and i complete the cycle

2519

01:42:27,109 --> 01:42:22,880

am i

2520

01:42:29,830 --> 01:42:27,119

no not late wait

2521

01:42:32,390 --> 01:42:29,840

technically you might be a day

2522

01:42:33,750 --> 01:42:32,400

no no sorry no you would not be i was

2523

01:42:35,109 --> 01:42:33,760

quite confused

2524

01:42:37,189 --> 01:42:35,119

if you do that with the warm horse

2525

01:42:38,550 --> 01:42:37,199

allergy we used earlier yes

2526

01:42:39,830 --> 01:42:38,560

if you're doing that with uh you know

2527

01:42:42,149 --> 01:42:39,840

slower than like your fashion like

2528

01:42:44,390 --> 01:42:42,159

travel or sorry even just relativistic

2529

01:42:46,629 --> 01:42:44,400

travel yes time will go slower and you

2530

01:42:47,990 --> 01:42:46,639

will save some time however you can't do

2531

01:42:48,950 --> 01:42:48,000

that just with the time zones because

2532

01:42:50,550 --> 01:42:48,960

they don't actually represent a

2533

01:42:51,830 --> 01:42:50,560

different time they just represent a

2534

01:42:53,189 --> 01:42:51,840

different time of

2535

01:42:55,669 --> 01:42:53,199

lighting

2536

01:42:58,070 --> 01:42:55,679

right man you're killing it for me again

2537

01:43:01,109 --> 01:42:58,080

okay so let's talk about yeah we've all

2538

01:43:03,830 --> 01:43:01,119

wondered about that we all have don't

2539

01:43:05,910 --> 01:43:03,840

don't sit here and say that you have not

2540

01:43:08,390 --> 01:43:05,920

thought about that because you have and

2541

01:43:11,430 --> 01:43:08,400

so of you isaac no i have yeah yeah

2542

01:43:13,270 --> 01:43:11,440

exactly exactly okay now let's talk

2543

01:43:17,350 --> 01:43:13,280

about wormholes

2544

01:43:19,270 --> 01:43:17,360

um the einstein rosen bridge which is

2545

01:43:21,270 --> 01:43:19,280

that is technically that's that's the

2546

01:43:22,149 --> 01:43:21,280

origin of the wormhole

2547

01:43:23,910 --> 01:43:22,159

uh

2548

01:43:25,669 --> 01:43:23,920

theory correct this it's the main woman

2549

01:43:27,830 --> 01:43:25,679

hall theory there's a number of

2550

01:43:29,669 --> 01:43:27,840

different types and again that's the one

2551

01:43:32,709 --> 01:43:29,679

that comes up from general relativity

2552

01:43:34,950 --> 01:43:32,719

yeah right okay so

2553

01:43:40,790 --> 01:43:34,960

what is

2554

01:43:43,030 --> 01:43:40,800

it the collapsing of a wormhole

2555

01:43:44,629 --> 01:43:43,040

or if we go back to

2556

01:43:48,390 --> 01:43:44,639

um

2557

01:43:49,350 --> 01:43:48,400

uh what's his name george uh lamatra

2558

01:43:55,109 --> 01:43:49,360

right

2559

01:43:58,470 --> 01:43:57,270

oh he starred in that he was time

2560

01:44:00,390 --> 01:43:58,480

traveling

2561

01:44:01,830 --> 01:44:00,400

that was him he was the writer but

2562

01:44:06,550 --> 01:44:01,840

here's the thing

2563

01:44:07,510 --> 01:44:06,560

uh disintegrating uh an atom

2564

01:44:10,310 --> 01:44:07,520

um

2565

01:44:13,030 --> 01:44:10,320

and the the ideas behind this

2566

01:44:15,030 --> 01:44:13,040

um is it i i think we were talking about

2567

01:44:17,189 --> 01:44:15,040

this last night with john uh with uh

2568

01:44:18,070 --> 01:44:17,199

what's up

2569

01:44:20,709 --> 01:44:18,080

um

2570

01:44:22,790 --> 01:44:20,719

is uh it's a very interesting situation

2571

01:44:23,830 --> 01:44:22,800

that we find ourselves in

2572

01:44:26,709 --> 01:44:23,840

and

2573

01:44:28,149 --> 01:44:26,719

is it is it just a matter of trying to

2574

01:44:31,270 --> 01:44:28,159

keep it open

2575

01:44:34,390 --> 01:44:31,280

and and is that just an amount of energy

2576

01:44:37,109 --> 01:44:34,400

that we don't understand or

2577

01:44:40,070 --> 01:44:37,119

would an advanced civilization

2578

01:44:42,310 --> 01:44:40,080

have tackled that and it's simpler

2579

01:44:44,950 --> 01:44:42,320

than we would think like the way that

2580

01:44:46,870 --> 01:44:44,960

kip thorne presented it in interstellar

2581

01:44:49,350 --> 01:44:46,880

or all the way back with carl sagan and

2582

01:44:51,350 --> 01:44:49,360

of course the movie contact contact yeah

2583

01:44:53,030 --> 01:44:51,360

uh all of the above i mean this is one

2584

01:44:54,790 --> 01:44:53,040

of the situations where

2585

01:44:56,790 --> 01:44:54,800

since we don't know the physical laws of

2586

01:44:58,550 --> 01:44:56,800

reality that cover this stuff that we

2587

01:45:00,310 --> 01:44:58,560

haven't discovered yet it's kind of hard

2588

01:45:01,750 --> 01:45:00,320

for say what can advanced civilization

2589

01:45:03,590 --> 01:45:01,760

do you know people say well isaac why

2590

01:45:05,510 --> 01:45:03,600

don't you just say ftl is not possible i

2591

01:45:07,189 --> 01:45:05,520

said well based on what we know physics

2592

01:45:09,030 --> 01:45:07,199

citizens and there could be obvious

2593

01:45:10,709 --> 01:45:09,040

exceptions there one thing i know for

2594

01:45:12,629 --> 01:45:10,719

certain is that any advanced

2595

01:45:14,950 --> 01:45:12,639

civilization is going to be working very

2596

01:45:16,629 --> 01:45:14,960

hard to try to crack how to go faster

2597

01:45:18,870 --> 01:45:16,639

than light how to travel in time and how

2598

01:45:20,790 --> 01:45:18,880

to beat entropy because of really big

2599

01:45:21,830 --> 01:45:20,800

problems worth solving you have to do

2600

01:45:23,189 --> 01:45:21,840

some kind of defensive barrier to

2601
01:45:24,390 --> 01:45:23,199
prevent someone from jumping back in

2602
01:45:26,310 --> 01:45:24,400
time and winning their wars of the year

2603
01:45:29,750 --> 01:45:26,320
by blowing your planet up before you got

2604
01:45:31,109 --> 01:45:29,760
space flights you know um but uh so they

2605
01:45:32,950 --> 01:45:31,119
would definitely be working on it and if

2606
01:45:35,350 --> 01:45:32,960
there's a solution they're gonna find it

2607
01:45:36,950 --> 01:45:35,360
you know if you're throwing i mean

2608
01:45:38,709 --> 01:45:36,960
some civilization made up of the

2609
01:45:40,550 --> 01:45:38,719
equivalent of trans humans or trans

2610
01:45:42,390 --> 01:45:40,560
aliens full of you know mind

2611
01:45:44,470 --> 01:45:42,400
augmentation and a post-human setup

2612
01:45:46,149 --> 01:45:44,480
where their brains are a million times

2613
01:45:48,229 --> 01:45:46,159

faster and bigger than ours and there's

2614

01:45:50,229 --> 01:45:48,239

trillions and trillions of them in some

2615

01:45:51,350 --> 01:45:50,239

kardashev civilization yeah they're

2616

01:45:52,950 --> 01:45:51,360

going to have people smaller than

2617

01:45:55,030 --> 01:45:52,960

einstein here all the guys who sweep the

2618

01:45:56,790 --> 01:45:55,040

floors and their main brains are going

2619

01:45:59,270 --> 01:45:56,800

to be on that problem if this can be

2620

01:46:00,550 --> 01:45:59,280

figured out they're gonna but you can be

2621

01:46:03,109 --> 01:46:00,560

the smallest person on the planet you

2622

01:46:04,709 --> 01:46:03,119

still can't make two plus two equal five

2623

01:46:07,189 --> 01:46:04,719

and uh and i know there's some math

2624

01:46:08,629 --> 01:46:07,199

there's great ways you could do that but

2625

01:46:10,390 --> 01:46:08,639

those don't really count because it's

2626
01:46:15,270 --> 01:46:10,400
not answering two plus two equals five

2627
01:46:20,629 --> 01:46:17,109
okay so

2628
01:46:23,510 --> 01:46:20,639
um is it uh when

2629
01:46:26,070 --> 01:46:23,520
the the preset if you go to

2630
01:46:26,870 --> 01:46:26,080
uh contact an interstellar and i know

2631
01:46:29,109 --> 01:46:26,880
that

2632
01:46:31,030 --> 01:46:29,119
uh i'm making an another hollywood

2633
01:46:33,030 --> 01:46:31,040
comparison here but it's more for

2634
01:46:34,950 --> 01:46:33,040
everybody's mind to kind of understand

2635
01:46:38,629 --> 01:46:34,960
what we are suggesting

2636
01:46:40,470 --> 01:46:38,639
um the the wormhole aspect of it

2637
01:46:42,229 --> 01:46:40,480
how is that

2638
01:46:43,109 --> 01:46:42,239

besides moving

2639

01:46:47,990 --> 01:46:43,119

the

2640

01:46:50,870 --> 01:46:48,000

but if you are moving from one point of

2641

01:46:53,430 --> 01:46:50,880

the universe to the other or

2642

01:46:56,950 --> 01:46:53,440

uh the milky way our galaxy

2643

01:46:59,590 --> 01:46:56,960

um how is that time travel

2644

01:47:02,709 --> 01:46:59,600

in in the movie contact

2645

01:47:04,550 --> 01:47:02,719

she's gone for 18 hours right

2646

01:47:07,510 --> 01:47:04,560

i forget the number but i think that's i

2647

01:47:11,109 --> 01:47:07,520

i think that's pretty close um but here

2648

01:47:14,070 --> 01:47:11,119

on earth it was a partial second

2649

01:47:17,350 --> 01:47:14,080

right pass through and and that was it

2650

01:47:19,270 --> 01:47:17,360

but how how is that time travel and how

2651

01:47:21,990 --> 01:47:19,280

does that apply

2652

01:47:23,990 --> 01:47:22,000

well if i'm going really fast but slower

2653

01:47:25,510 --> 01:47:24,000

than light my time slows down the usual

2654

01:47:27,350 --> 01:47:25,520

idea there is that if you've engaged

2655

01:47:28,790 --> 01:47:27,360

something that would speed up your time

2656

01:47:29,910 --> 01:47:28,800

you passed you know that's where you

2657

01:47:31,350 --> 01:47:29,920

start looking at with the time travel

2658

01:47:32,229 --> 01:47:31,360

paradox or things like that where you've

2659

01:47:33,910 --> 01:47:32,239

got

2660

01:47:36,149 --> 01:47:33,920

something faster like yes you could have

2661

01:47:38,149 --> 01:47:36,159

more time pass what happened they are

2662

01:47:40,390 --> 01:47:38,159

there's a lot of cases and i'm trying to

2663

01:47:41,910 --> 01:47:40,400

remember what actually was for contact

2664

01:47:43,430 --> 01:47:41,920

you know when scientists help with

2665

01:47:45,270 --> 01:47:43,440

sci-fi things they don't usually insist

2666

01:47:47,270 --> 01:47:45,280

on 100 scientific accuracy because

2667

01:47:48,790 --> 01:47:47,280

they're trying to show a key concept

2668

01:47:51,109 --> 01:47:48,800

they appreciate that sci-fi can't always

2669

01:47:53,030 --> 01:47:51,119

hit every button but you know you could

2670

01:47:55,030 --> 01:47:53,040

potentially have a civilization that was

2671

01:47:56,149 --> 01:47:55,040

sending you that information that didn't

2672

01:47:58,070 --> 01:47:56,159

exist yet

2673

01:47:59,590 --> 01:47:58,080

uh your really big civilizations that

2674

01:48:01,189 --> 01:47:59,600

were around the very biggest of black

2675

01:48:03,109 --> 01:48:01,199

holes the ones that would take

2676

01:48:05,189 --> 01:48:03,119

trillions of years to form nasty or be

2677

01:48:06,870 --> 01:48:05,199

built that might be who's actually you

2678

01:48:08,790 --> 01:48:06,880

know you're contacting

2679

01:48:10,870 --> 01:48:08,800

we see some examples then like alistair

2680

01:48:12,149 --> 01:48:10,880

reynolds novel pushing ice where you

2681

01:48:13,750 --> 01:48:12,159

know it just moves back you know they're

2682

01:48:15,830 --> 01:48:13,760

moving so far forward in time without

2683

01:48:17,189 --> 01:48:15,840

realizing it from their high speeds that

2684

01:48:19,510 --> 01:48:17,199

most of the cultures they think they're

2685

01:48:21,030 --> 01:48:19,520

encountering as aliens came millions or

2686

01:48:23,030 --> 01:48:21,040

billions of years after humans went

2687

01:48:26,149 --> 01:48:23,040

extinct but they think it was happening

2688

01:48:27,510 --> 01:48:26,159

simultaneously right right right right

2689

01:48:29,270 --> 01:48:27,520

in some of these cases you might

2690

01:48:31,510 --> 01:48:29,280

actually have well oh well we figured

2691

01:48:33,189 --> 01:48:31,520

out way way ahead in the future and be

2692

01:48:35,189 --> 01:48:33,199

able to gather you send yourself forward

2693

01:48:36,629 --> 01:48:35,199

in time and then we sent you back in

2694

01:48:38,229 --> 01:48:36,639

time and you could do that with a close

2695

01:48:40,790 --> 01:48:38,239

time like loop for instance you could

2696

01:48:42,310 --> 01:48:40,800

say if those work you build this machine

2697

01:48:44,310 --> 01:48:42,320

and this machine is your starting point

2698

01:48:46,950 --> 01:48:44,320

the moment you engage we can send you

2699

01:48:49,430 --> 01:48:46,960

back to that beginning point so you jump

2700

01:48:51,189 --> 01:48:49,440

far away far forward in time or space

2701
01:48:53,030 --> 01:48:51,199
and we can send you right back to the to

2702
01:48:54,790 --> 01:48:53,040
the first moment that machine was built

2703
01:48:56,070 --> 01:48:54,800
or sometime thereafter

2704
01:49:00,790 --> 01:48:56,080
that's

2705
01:49:03,270 --> 01:49:00,800
relativity well didn't einstein actually

2706
01:49:04,790 --> 01:49:03,280
if if he did address time travel

2707
01:49:07,270 --> 01:49:04,800
directly

2708
01:49:09,590 --> 01:49:07,280
he did do it with time loops

2709
01:49:12,229 --> 01:49:09,600
um with closed time-like loops well yeah

2710
01:49:15,510 --> 01:49:12,239
with time loops um and what the case is

2711
01:49:17,589 --> 01:49:15,520
there is in if i move that that singular

2712
01:49:19,750 --> 01:49:17,599
that slow time moment of of the

2713
01:49:21,189 --> 01:49:19,760

black hole if i'm moving that around so

2714

01:49:22,870 --> 01:49:21,199

time is passed less for it and i bring

2715

01:49:25,109 --> 01:49:22,880

it back i got the twin paradox thing we

2716

01:49:26,629 --> 01:49:25,119

have very low times pass for that

2717

01:49:28,790 --> 01:49:26,639

that becomes our moment zero and that's

2718

01:49:30,070 --> 01:49:28,800

why i can step back around too in a case

2719

01:49:31,830 --> 01:49:30,080

like that how that works out with the

2720

01:49:34,149 --> 01:49:31,840

rest of the universe is

2721

01:49:35,750 --> 01:49:34,159

really hard to say and then something

2722

01:49:37,189 --> 01:49:35,760

that that would automatically cause you

2723

01:49:38,950 --> 01:49:37,199

to have like another split off universe

2724

01:49:41,189 --> 01:49:38,960

that was walled off you know that might

2725

01:49:43,510 --> 01:49:41,199

be one of those national big bang or

2726
01:49:44,709 --> 01:49:43,520
micro universe things yeah stop right

2727
01:49:46,950 --> 01:49:44,719
there

2728
01:49:49,750 --> 01:49:46,960
if that is the case

2729
01:49:51,750 --> 01:49:49,760
does the rest of the universe experience

2730
01:49:55,830 --> 01:49:51,760
the same thing

2731
01:49:58,070 --> 01:49:55,840
or is this completely localized or does

2732
01:50:00,149 --> 01:49:58,080
every planet go through that time loop

2733
01:50:01,510 --> 01:50:00,159
does every star system go through that

2734
01:50:02,709 --> 01:50:01,520
time loop

2735
01:50:03,990 --> 01:50:02,719
you know i actually looked at that case

2736
01:50:06,390 --> 01:50:04,000
in the upcoming episode i was talking

2737
01:50:07,750 --> 01:50:06,400
about time wars

2738
01:50:09,109 --> 01:50:07,760

what happens like

2739

01:50:10,870 --> 01:50:09,119

with a lot of things like a quantum

2740

01:50:12,310 --> 01:50:10,880

zerba event where we say well i you know

2741

01:50:15,030 --> 01:50:12,320

i'm looking to see what happens is this

2742

01:50:17,589 --> 01:50:15,040

cat alive or dead and i look inside that

2743

01:50:19,830 --> 01:50:17,599

box and by the way the the cat dead or

2744

01:50:22,229 --> 01:50:19,840

alive thing is exactly contradictory to

2745

01:50:25,109 --> 01:50:22,239

multiverses these are opposed theories

2746

01:50:27,589 --> 01:50:25,119

that are both true at once um but if i

2747

01:50:29,669 --> 01:50:27,599

have an event like that let's say i'm a

2748

01:50:31,669 --> 01:50:29,679

distant alien looking from a billion

2749

01:50:34,629 --> 01:50:31,679

years away a billion light years away

2750

01:50:36,390 --> 01:50:34,639

and i i got the great telescope or the

2751
01:50:38,070 --> 01:50:36,400
path once we look at it and somebody

2752
01:50:39,750 --> 01:50:38,080
opens that box and the first time i see

2753
01:50:41,270 --> 01:50:39,760
it and is it still randomly being

2754
01:50:42,149 --> 01:50:41,280
decided by me

2755
01:50:43,510 --> 01:50:42,159
and what happened to the rest of the

2756
01:50:46,070 --> 01:50:43,520
universe that was affected by that now

2757
01:50:47,430 --> 01:50:46,080
that i is the observer of that cat a

2758
01:50:49,109 --> 01:50:47,440
billion light years away in a billion

2759
01:50:51,189 --> 01:50:49,119
years in the future have now seen it

2760
01:50:53,189 --> 01:50:51,199
being alive or dead and the whole

2761
01:50:54,790 --> 01:50:53,199
universe reacts on that did a place

2762
01:50:57,430 --> 01:50:54,800
where it was actually dead and the owner

2763
01:50:59,750 --> 01:50:57,440

was saddened by that and and decided to

2764

01:51:01,510 --> 01:50:59,760

build a doomsday device to blow up earth

2765

01:51:03,589 --> 01:51:01,520

uh did that reality no longer happen

2766

01:51:05,270 --> 01:51:03,599

because of uh me looking for a billion

2767

01:51:07,109 --> 01:51:05,280

light years away and see the cat was

2768

01:51:09,189 --> 01:51:07,119

still alive and he's all good now and

2769

01:51:11,910 --> 01:51:09,199

they're going to become a space empire

2770

01:51:13,350 --> 01:51:11,920

right those kind of paradoxes are

2771

01:51:15,189 --> 01:51:13,360

very tricky because we talk about things

2772

01:51:16,470 --> 01:51:15,199

like alternate timelines or alternate

2773

01:51:17,990 --> 01:51:16,480

universes

2774

01:51:19,589 --> 01:51:18,000

you could potentially have several

2775

01:51:22,149 --> 01:51:19,599

different versions of reality going on

2776

01:51:23,669 --> 01:51:22,159

inside the same observable universe

2777

01:51:25,109 --> 01:51:23,679

vitamins the moment that there are light

2778

01:51:27,669 --> 01:51:25,119

cones actually you know set with each

2779

01:51:30,790 --> 01:51:27,679

other that their event horizons do which

2780

01:51:32,629 --> 01:51:30,800

is not just limited black holes

2781

01:51:35,030 --> 01:51:32,639

now uh

2782

01:51:38,470 --> 01:51:35,040

you know i mean this is a time travel

2783

01:51:40,470 --> 01:51:38,480

question but it sort of is but it's uh

2784

01:51:41,669 --> 01:51:40,480

from what you just said

2785

01:51:43,430 --> 01:51:41,679

if we are

2786

01:51:45,430 --> 01:51:43,440

standing on earth

2787

01:51:47,350 --> 01:51:45,440

you and i we're in our backyard and

2788

01:51:50,149 --> 01:51:47,360

we're looking at a star right we're

2789

01:51:53,510 --> 01:51:50,159

looking at the andromeda smudge

2790

01:51:55,510 --> 01:51:53,520

right okay and we understand that it's x

2791

01:51:57,350 --> 01:51:55,520

amount of light years away thousand

2792

01:51:59,030 --> 01:51:57,360

light years ten million years whatever

2793

01:52:01,030 --> 01:51:59,040

two million whatever it is that we're

2794

01:52:02,550 --> 01:52:01,040

looking i'm just stars andromeda

2795

01:52:06,550 --> 01:52:02,560

whatever

2796

01:52:07,830 --> 01:52:06,560

but that is relative to where we are

2797

01:52:10,629 --> 01:52:07,840

standing

2798

01:52:13,189 --> 01:52:10,639

on earth that's how long that light has

2799

01:52:14,790 --> 01:52:13,199

taken to reach isaac and jimmy standing

2800

01:52:18,470 --> 01:52:14,800

in my backyard

2801
01:52:19,189 --> 01:52:18,480
but if you have like the james webb

2802
01:52:21,990 --> 01:52:19,199
and

2803
01:52:25,030 --> 01:52:22,000
the telescope is looking

2804
01:52:30,629 --> 01:52:27,350
is it still

2805
01:52:33,270 --> 01:52:30,639
2 million light years away or is it

2806
01:52:34,870 --> 01:52:33,280
a million light years away if it's that

2807
01:52:37,510 --> 01:52:34,880
much closer

2808
01:52:39,030 --> 01:52:37,520
right are you looking past

2809
01:52:40,229 --> 01:52:39,040
right because the light would have

2810
01:52:42,790 --> 01:52:40,239
already

2811
01:52:45,189 --> 01:52:42,800
we're looking at it at a different

2812
01:52:46,149 --> 01:52:45,199
at a different point in a in a linear

2813
01:52:48,709 --> 01:52:46,159

sense

2814

01:52:50,310 --> 01:52:48,719

so is the james webb looking at stuff

2815

01:52:54,070 --> 01:52:50,320

closer to

2816

01:52:56,629 --> 01:52:54,080

its its current timeline as opposed to

2817

01:52:57,990 --> 01:52:56,639

how long light takes to reach earth

2818

01:53:00,310 --> 01:52:58,000

no the james webb can actually look

2819

01:53:01,830 --> 01:53:00,320

further back in time accurately but uh

2820

01:53:03,510 --> 01:53:01,840

it it hasn't been to do with when the

2821

01:53:05,589 --> 01:53:03,520

lights um it's just the strength of how

2822

01:53:07,830 --> 01:53:05,599

well we can see it uh the light that

2823

01:53:09,990 --> 01:53:07,840

hits it is is any photon that's had time

2824

01:53:12,070 --> 01:53:10,000

to travel to it so for instance there's

2825

01:53:14,310 --> 01:53:12,080

going to have ones from 380 000 years

2826
01:53:16,070 --> 01:53:14,320
into the after the big bang the the last

2827
01:53:17,830 --> 01:53:16,080
surface is

2828
01:53:19,270 --> 01:53:17,840
the surface of last scattering which is

2829
01:53:21,510 --> 01:53:19,280
the edge of the universe for practical

2830
01:53:23,430 --> 01:53:21,520
edge is a giant wall there of of old

2831
01:53:24,709 --> 01:53:23,440
light that we call cosmic microwave

2832
01:53:26,790 --> 01:53:24,719
background radiation from the whole

2833
01:53:28,470 --> 01:53:26,800
universe was as hot as a star

2834
01:53:29,510 --> 01:53:28,480
um and then of course to be looking at

2835
01:53:30,709 --> 01:53:29,520
something that was right in front of if

2836
01:53:32,950 --> 01:53:30,719
you put your hand in front of the james

2837
01:53:34,070 --> 01:53:32,960
bond telescope uh you know if you

2838
01:53:36,070 --> 01:53:34,080

something on the other side of the moon

2839

01:53:38,470 --> 01:53:36,080

and you can do that uh it would see your

2840

01:53:40,390 --> 01:53:38,480

hand still it would see it as it was the

2841

01:53:41,830 --> 01:53:40,400

nanosecond before when your light left

2842

01:53:43,430 --> 01:53:41,840

your hand it's just getting them

2843

01:53:44,790 --> 01:53:43,440

received but it doesn't let you look

2844

01:53:46,229 --> 01:53:44,800

further back in time yeah i mean in

2845

01:53:47,990 --> 01:53:46,239

terms of accuracy you can see a lot

2846

01:53:50,310 --> 01:53:48,000

better because you can see the

2847

01:53:51,750 --> 01:53:50,320

much thinner haze of what uh you know

2848

01:53:54,149 --> 01:53:51,760

tiny little photons is much higher

2849

01:53:55,830 --> 01:53:54,159

resolution so it can see more i

2850

01:53:58,229 --> 01:53:55,840

shouldn't say tiny little photons if

2851
01:54:00,790 --> 01:53:58,239
there are far fewer photons for an event

2852
01:54:02,629 --> 01:54:00,800
that far away in time and space reaching

2853
01:54:04,390 --> 01:54:02,639
it so it has the resolution to be able

2854
01:54:05,669 --> 01:54:04,400
to make an image out of that

2855
01:54:08,310 --> 01:54:05,679
so

2856
01:54:10,709 --> 01:54:08,320
you are suggesting that what i am saying

2857
01:54:12,629 --> 01:54:10,719
is accurate if something is a thousand

2858
01:54:15,350 --> 01:54:12,639
light years away and you have a high

2859
01:54:18,629 --> 01:54:15,360
resolution telescope and you are looking

2860
01:54:19,510 --> 01:54:18,639
at it at a spot that would only be

2861
01:54:22,629 --> 01:54:19,520
say

2862
01:54:26,070 --> 01:54:22,639
a hundred light years away right in

2863
01:54:29,510 --> 01:54:26,080

distance are you then looking at it in

2864

01:54:32,550 --> 01:54:29,520

that specific time not a thousand years

2865

01:54:34,870 --> 01:54:32,560

indifference but a hundred years

2866

01:54:36,790 --> 01:54:34,880

i'm not sure i understood that one uh i

2867

01:54:38,709 --> 01:54:36,800

mean however far away it is well i

2868

01:54:40,629 --> 01:54:38,719

shouldn't say how far away it is however

2869

01:54:42,950 --> 01:54:40,639

long the light's been traveling to that

2870

01:54:44,950 --> 01:54:42,960

until it reaches you that's that's when

2871

01:54:46,070 --> 01:54:44,960

you're looking back in time to there are

2872

01:54:47,589 --> 01:54:46,080

things that might be a billion light

2873

01:54:49,350 --> 01:54:47,599

years away from us now where we're

2874

01:54:50,550 --> 01:54:49,360

actually seeing light that left them 500

2875

01:54:52,070 --> 01:54:50,560

million years ago

2876
01:54:53,910 --> 01:54:52,080
uh just because there's that expanding

2877
01:54:56,709 --> 01:54:53,920
space between us thing which

2878
01:54:58,470 --> 01:54:56,719
is not as confusing as it sounds like

2879
01:55:00,790 --> 01:54:58,480
yeah and so that's what i'm suggesting

2880
01:55:01,830 --> 01:55:00,800
is the telescope looking at

2881
01:55:05,030 --> 01:55:01,840
uh

2882
01:55:07,189 --> 01:55:05,040
the light as it has traveled only

2883
01:55:08,310 --> 01:55:07,199
200 light years instead of the full

2884
01:55:09,910 --> 01:55:08,320
thousand

2885
01:55:11,189 --> 01:55:09,920
only if it's an object that's 200 light

2886
01:55:13,350 --> 01:55:11,199
years away

2887
01:55:14,870 --> 01:55:13,360
ah so it doesn't change you blew it for

2888
01:55:17,030 --> 01:55:14,880

me again

2889

01:55:19,430 --> 01:55:17,040

it just it's the it does a better job

2890

01:55:21,990 --> 01:55:19,440

absorbing those bits of light to see

2891

01:55:25,990 --> 01:55:22,000

clearly yeah i get it i get it i get it

2892

01:55:27,669 --> 01:55:26,000

all right now let's uh let's again shift

2893

01:55:29,589 --> 01:55:27,679

this around

2894

01:55:39,750 --> 01:55:29,599

if

2895

01:55:42,950 --> 01:55:39,760

time that'd be pretty cool to go back

2896

01:55:47,030 --> 01:55:42,960

into the 50s would be pretty cool right

2897

01:55:49,270 --> 01:55:47,040

now if but you couldn't come back

2898

01:55:50,070 --> 01:55:49,280

right you couldn't come back

2899

01:55:59,750 --> 01:55:50,080

the

2900

01:56:02,070 --> 01:55:59,760

universe

2901
01:56:03,430 --> 01:56:02,080
by removing

2902
01:56:06,550 --> 01:56:03,440
atoms

2903
01:56:08,229 --> 01:56:06,560
particles at this point in time

2904
01:56:09,990 --> 01:56:08,239
cutting them out

2905
01:56:10,870 --> 01:56:10,000
and placing them

2906
01:56:13,510 --> 01:56:10,880
at

2907
01:56:16,870 --> 01:56:13,520
50 60 70 years ago

2908
01:56:17,830 --> 01:56:16,880
and now there's more particles

2909
01:56:21,270 --> 01:56:17,840
in that

2910
01:56:22,950 --> 01:56:21,280
than the universe knew about and there's

2911
01:56:25,669 --> 01:56:22,960
less in the future

2912
01:56:29,270 --> 01:56:25,679
does that upset things do we absolutely

2913
01:56:31,109 --> 01:56:29,280

yeah there was no like if you cannot

2914

01:56:32,950 --> 01:56:31,119

change the mass of time but could send

2915

01:56:34,229 --> 01:56:32,960

information back let's say i just i

2916

01:56:36,070 --> 01:56:34,239

you're not allowed to send any more

2917

01:56:37,750 --> 01:56:36,080

massive energy back at all it's got to

2918

01:56:39,910 --> 01:56:37,760

be an even budget you're teleporting

2919

01:56:42,149 --> 01:56:39,920

into something as a 120 into you you

2920

01:56:44,790 --> 01:56:42,159

still affect time you cannot get around

2921

01:56:47,189 --> 01:56:44,800

this because even the one neutrino that

2922

01:56:49,109 --> 01:56:47,199

got deflected off you uh differently by

2923

01:56:50,950 --> 01:56:49,119

your position your pattern while you're

2924

01:56:53,270 --> 01:56:50,960

in your hidden mountain cave that wasn't

2925

01:56:56,070 --> 01:56:53,280

affecting anything at all even that

2926

01:56:57,430 --> 01:56:56,080

changed it even that tiny little change

2927

01:56:59,990 --> 01:56:57,440

changed up and created additional

2928

01:57:01,270 --> 01:57:00,000

realities we start actually adding mass

2929

01:57:02,629 --> 01:57:01,280

universes

2930

01:57:03,830 --> 01:57:02,639

and when we're discussing multiverse

2931

01:57:05,109 --> 01:57:03,840

theory there are

2932

01:57:07,510 --> 01:57:05,119

so many different versions the word

2933

01:57:08,629 --> 01:57:07,520

multiverse very appropriately that apply

2934

01:57:10,390 --> 01:57:08,639

but the one where it's just every

2935

01:57:12,390 --> 01:57:10,400

possible reality that you could

2936

01:57:14,229 --> 01:57:12,400

configure particles into right you

2937

01:57:16,870 --> 01:57:14,239

shuffle the deck every single version

2938

01:57:19,030 --> 01:57:16,880

has one this number is insanely huge we

2939

01:57:20,870 --> 01:57:19,040

actually have to use scientific notation

2940

01:57:23,350 --> 01:57:20,880

on top of scientific notation these like

2941

01:57:25,830 --> 01:57:23,360

10 to the 10 to the 700 right to

2942

01:57:27,750 --> 01:57:25,840

describe these huge numbers once we said

2943

01:57:30,390 --> 01:57:27,760

them down they would actually saw 70. i

2944

01:57:31,990 --> 01:57:30,400

think it's 10 to 170. the numbers though

2945

01:57:33,589 --> 01:57:32,000

so big that if you actually wrote them

2946

01:57:35,510 --> 01:57:33,599

down on a piece of paper

2947

01:57:37,109 --> 01:57:35,520

they would collapse into a black hole

2948

01:57:39,189 --> 01:57:37,119

that's how massive some of these numbers

2949

01:57:41,589 --> 01:57:39,199

off right right

2950

01:57:43,510 --> 01:57:41,599

i get it i get it but in this case

2951
01:57:45,030 --> 01:57:43,520
you've changed that now you've added one

2952
01:57:46,629 --> 01:57:45,040
particle to this

2953
01:57:49,109 --> 01:57:46,639
it's the same as how many combinations

2954
01:57:51,030 --> 01:57:49,119
of cards you have if i have you know a

2955
01:57:53,750 --> 01:57:51,040
deck of colors 52 cards the number of

2956
01:57:56,229 --> 01:57:53,760
combinations that can be in is a very

2957
01:57:57,830 --> 01:57:56,239
large number but if i have 53 cards i

2958
01:57:58,709 --> 01:57:57,840
have to multiply that very large number

2959
01:57:59,990 --> 01:57:58,719
again

2960
01:58:02,149 --> 01:58:00,000
in there and there's so many more

2961
01:58:03,830 --> 01:58:02,159
options just because of that one more

2962
01:58:06,790 --> 01:58:03,840
atom in the universe of which there was

2963
01:58:09,189 --> 01:58:06,800

10 to 80 atoms like that um changes how

2964

01:58:11,589 --> 01:58:09,199

many possibilities there are by more

2965

01:58:13,669 --> 01:58:11,599

than they were before way more like an

2966

01:58:15,350 --> 01:58:13,679

entire order of magnitude more and that

2967

01:58:17,589 --> 01:58:15,360

would be even more if i add a person

2968

01:58:18,870 --> 01:58:17,599

into the mix so when you do something

2969

01:58:20,709 --> 01:58:18,880

like that you'll branch off so many

2970

01:58:21,910 --> 01:58:20,719

additional timelines and that's actually

2971

01:58:23,270 --> 01:58:21,920

how you have that case where i said

2972

01:58:25,430 --> 01:58:23,280

earlier if you went back in time with

2973

01:58:26,870 --> 01:58:25,440

your own mass every version of you that

2974

01:58:28,629 --> 01:58:26,880

wouldn't did that at that same point in

2975

01:58:31,030 --> 01:58:28,639

time there'd be so many of them you

2976

01:58:32,229 --> 01:58:31,040

collapse and cause a black hole

2977

01:58:35,030 --> 01:58:32,239

just for the ones decide we're at the

2978

01:58:37,910 --> 01:58:35,040

same time we could we could virtually

2979

01:58:40,790 --> 01:58:37,920

end the universe like this so the only

2980

01:58:42,109 --> 01:58:40,800

answer to that certainly mathematically

2981

01:58:44,790 --> 01:58:42,119

is to

2982

01:58:47,109 --> 01:58:44,800

instantaneously at that moment

2983

01:58:49,270 --> 01:58:47,119

uh create another dimension another

2984

01:58:52,149 --> 01:58:49,280

another universe another multiverse

2985

01:58:54,070 --> 01:58:52,159

because if it occurred in this universe

2986

01:58:55,669 --> 01:58:54,080

it would be the end of everything right

2987

01:58:57,350 --> 01:58:55,679

that one's okay though if you can travel

2988

01:58:59,669 --> 01:58:57,360

to another universe you create a whole

2989

01:59:01,189 --> 01:58:59,679

new universe as a war in the process and

2990

01:59:02,390 --> 01:59:01,199

people get bothered by that sometimes

2991

01:59:03,589 --> 01:59:02,400

because it violates conservation of

2992

01:59:05,350 --> 01:59:03,599

energy just making universe out of

2993

01:59:08,070 --> 01:59:05,360

nowhere but we only care about

2994

01:59:09,990 --> 01:59:08,080

conservation of energy inside the

2995

01:59:12,390 --> 01:59:10,000

existing universe how many combinations

2996

01:59:14,149 --> 01:59:12,400

there doesn't really matter um but you

2997

01:59:15,830 --> 01:59:14,159

make this whole new universe

2998

01:59:17,910 --> 01:59:15,840

and it's got all these new options and

2999

01:59:20,149 --> 01:59:17,920

that's consistent and that wouldn't

3000

01:59:21,830 --> 01:59:20,159

cause paradoxes either because let's say

3001

01:59:24,070 --> 01:59:21,840

next year i invent a time machine and i

3002

01:59:25,430 --> 01:59:24,080

go back to your 1950 that causes

3003

01:59:27,430 --> 01:59:25,440

paradoxes only if i'm going to my own

3004

01:59:29,030 --> 01:59:27,440

timeline if i'm going

3005

01:59:31,430 --> 01:59:29,040

to a multiverse in which that's the one

3006

01:59:32,870 --> 01:59:31,440

new thing that happened that's fine but

3007

01:59:34,310 --> 01:59:32,880

we did an entire episode of that called

3008

01:59:36,310 --> 01:59:34,320

infinite and probability issues which

3009

01:59:38,149 --> 01:59:36,320

people probably remember was the quantum

3010

01:59:39,350 --> 01:59:38,159

cheeseburger episode uh where we

3011

01:59:41,350 --> 01:59:39,360

basically talked about all the crazy

3012

01:59:43,589 --> 01:59:41,360

things start happening we have those

3013

01:59:45,510 --> 01:59:43,599

vastly huge number of alternate

3014

01:59:47,990 --> 01:59:45,520

universes and timelines so you would

3015

01:59:49,669 --> 01:59:48,000

have one for instance where ftl travel

3016

01:59:52,070 --> 01:59:49,679

was not possible but everybody thought

3017

01:59:53,990 --> 01:59:52,080

it was because just coincidentally you

3018

01:59:54,870 --> 01:59:54,000

were in the one timeline in which every

3019

01:59:57,350 --> 01:59:54,880

time

3020

01:59:58,950 --> 01:59:57,360

somebody turned on the ftl drive which

3021

02:00:00,709 --> 01:59:58,960

was actually a doomsday device that blew

3022

02:00:03,750 --> 02:00:00,719

up the post who touched it they were

3023

02:00:05,030 --> 02:00:03,760

vaporized but at the expected place they

3024

02:00:07,510 --> 02:00:05,040

were supposed to materialize they

3025

02:00:09,189 --> 02:00:07,520

thought that actually happened that is

3026

02:00:11,990 --> 02:00:09,199

theoretically possible the chance of it

3027

02:00:13,270 --> 02:00:12,000

are mathematically ridiculously tiny and

3028

02:00:14,870 --> 02:00:13,280

yet there would be a universe in which

3029

02:00:16,709 --> 02:00:14,880

that happened not only once but

3030

02:00:18,070 --> 02:00:16,719

coincidentally every single time

3031

02:00:19,510 --> 02:00:18,080

somebody did it

3032

02:00:20,790 --> 02:00:19,520

and that's the kind of weird stuff you

3033

02:00:22,070 --> 02:00:20,800

could have a case like that because you

3034

02:00:24,149 --> 02:00:22,080

would not know

3035

02:00:26,149 --> 02:00:24,159

that uh it was just a freak coincidence

3036

02:00:28,070 --> 02:00:26,159

you know

3037

02:00:30,229 --> 02:00:28,080

there uh we need to take our break right

3038

02:00:31,750 --> 02:00:30,239

here but we're going to continue this

3039

02:00:33,990 --> 02:00:31,760

when we come back after the break it's

3040

02:00:36,870 --> 02:00:34,000

one of the most fascinating aspects

3041

02:00:38,709 --> 02:00:36,880

of of time travel and also when we come

3042

02:00:40,550 --> 02:00:38,719

back after the break

3043

02:00:43,189 --> 02:00:40,560

the earth is moving

3044

02:00:45,830 --> 02:00:43,199

if you're moving in time

3045

02:00:47,430 --> 02:00:45,840

how do you not end up in space

3046

02:00:50,229 --> 02:00:47,440

we'll talk about that when we come back

3047

02:00:51,149 --> 02:00:50,239

after the break stay with us

3048

02:00:57,260 --> 02:00:51,159

hi

3049

02:01:01,270 --> 02:00:58,790

[Music]

3050

02:01:04,629 --> 02:01:01,280

your 1 million gigawatt paranormal

3051

02:01:06,390 --> 02:01:04,639

powerhouse kumx db

3052

02:01:08,550 --> 02:01:06,400

the x

3053

02:01:11,270 --> 02:01:08,560

right now the world couldn't be more

3054

02:01:14,149 --> 02:01:11,280

chaotic history shows us what gold does

3055

02:01:16,629 --> 02:01:14,159

when the world goes crazy it goes up in

3056

02:01:19,109 --> 02:01:16,639

value right now we're in unprecedented

3057

02:01:22,310 --> 02:01:19,119

times the pandemic the war in ukraine

3058

02:01:24,390 --> 02:01:22,320

the evaluation of the us dollar gold and

3059

02:01:26,310 --> 02:01:24,400

other precious metals are a defense

3060

02:01:28,870 --> 02:01:26,320

measure against the hyper inflation

3061

02:01:31,189 --> 02:01:28,880

that's happening right now so what can

3062

02:01:33,750 --> 02:01:31,199

you do to protect yourself call my

3063

02:01:35,910 --> 02:01:33,760

friend alan johnson at united gold group

3064

02:01:37,990 --> 02:01:35,920

he's dedicated to helping people secure

3065

02:01:40,470 --> 02:01:38,000

their retirement income he'll help you

3066

02:01:42,629 --> 02:01:40,480

with gold with silver and other precious

3067

02:01:46,149 --> 02:01:42,639

metals and show you how to set up your

3068

02:01:48,470 --> 02:01:46,159

own self-directed ira safe and secure

3069

02:01:50,790 --> 02:01:48,480

united gold group makes gold ownership

3070

02:01:53,589 --> 02:01:50,800

easy and affordable there couldn't be a

3071

02:01:55,270 --> 02:01:53,599

better time so call now and get a silver

3072

02:02:00,709 --> 02:01:55,280

american eagle proof set with a

3073

02:02:00,719 --> 02:02:04,709

that's 800-753-8555

3074

02:02:12,390 --> 02:02:07,750

or visit unitedgoldgroup.com

3075

02:02:14,390 --> 02:02:12,400

reach out to my friend alan johnson

3076

02:02:16,790 --> 02:02:14,400

the believer is the chilling true story

3077

02:02:19,109 --> 02:02:16,800

of dr john mack a renowned harvard

3078

02:02:21,669 --> 02:02:19,119

psychiatrist and pulitzer prize winner

3079

02:02:24,390 --> 02:02:21,679

this is a outreach program from the

3080

02:02:26,790 --> 02:02:24,400

cosmos to the consciously impaired he

3081

02:02:29,750 --> 02:02:26,800

risked it all to investigate human

3082

02:02:32,390 --> 02:02:29,760

encounters with alia the believer

3083

02:02:34,629 --> 02:02:32,400

alien encounters hard science and the

3084

02:02:36,550 --> 02:02:34,639

passion of john mack written by

3085

02:02:38,790 --> 02:02:36,560

award-winning former new york times

3086

02:02:40,870 --> 02:02:38,800

journalist and author ralph blumenthal

3087

02:02:43,030 --> 02:02:40,880

now available in paperback from high

3088

02:02:44,709 --> 02:02:43,040

road books

3089

02:02:47,350 --> 02:02:44,719

are you ready to read about true

3090

02:02:50,149 --> 02:02:47,360

paranormal events onex media publishes

3091

02:02:52,470 --> 02:02:50,159

nonfiction books about ufos ghosts and

3092

02:02:55,750 --> 02:02:52,480

haunted places time anomalies cryptid

3093

02:02:57,990 --> 02:02:55,760

creatures and more just like kunx db

3094

02:03:00,910 --> 02:02:58,000

radio it's all about unexplained

3095

02:03:02,950 --> 02:03:00,920

phenomena visit

3096

02:03:05,109 --> 02:03:02,960

www.unexmedia.com to see our list of

3097

02:03:07,750 --> 02:03:05,119

great book titles by debbie zigglemeyer

3098

02:03:10,310 --> 02:03:07,760

gene walker devin listrom wayne lawrence

3099

02:03:13,589 --> 02:03:10,320

bill spicer and yours truly margie k

3100

02:03:15,430 --> 02:03:13,599

that's on xmedia.com

3101
02:03:18,790 --> 02:03:15,440
this is jimmy church of fade to black

3102
02:03:21,990 --> 02:03:18,800
and i only drink fade to black blend

3103
02:03:24,189 --> 02:03:22,000
coffee from river moon just click on the

3104
02:03:27,270 --> 02:03:24,199
river moon coffee banner at

3105
02:03:29,430 --> 02:03:27,280
jimmychurchradio.com promo code f2b

3106
02:03:32,070 --> 02:03:29,440
blend

3107
02:03:34,870 --> 02:03:32,080
this is the only way forward

3108
02:03:37,270 --> 02:03:34,880
this is paid to black

3109
02:03:40,790 --> 02:03:37,280
make contact

3110
02:03:43,109 --> 02:03:40,800
join us august 5th through the 7th 2022

3111
02:03:45,589 --> 02:03:43,119
at the drury conference center in cape

3112
02:03:48,069 --> 02:03:45,599
girardeau missouri for the launch of the

3113
02:03:51,030 --> 02:03:48,079

midwest conference on the unknown there

3114

02:03:53,510 --> 02:03:51,040

are three interactive days packed with

3115

02:03:55,990 --> 02:03:53,520

vendors exhibitors and nationally

3116

02:03:59,510 --> 02:03:56,000

recognized researchers presenting on

3117

02:04:02,310 --> 02:03:59,520

unknown topics like ufo uap phenomenon

3118

02:04:05,669 --> 02:04:02,320

ghosts and bigfoot and missouri's own

3119

02:04:07,750 --> 02:04:05,679

momo the missouri monster cape girardo

3120

02:04:11,910 --> 02:04:07,760

has long been one of the most sought out

3121

02:04:15,030 --> 02:04:11,920

areas for ufo enthusiasts since the 1941

3122

02:04:17,510 --> 02:04:15,040

ufo crash and now is your chance to be a

3123

02:04:20,950 --> 02:04:17,520

part of the inaugural conference visit

3124

02:04:23,430 --> 02:04:20,960

cake dash events.com or follow us on

3125

02:04:25,510 --> 02:04:23,440

facebook at midwest conference on the

3126

02:04:27,510 --> 02:04:25,520

unknown for more information

3127

02:04:31,109 --> 02:04:27,520

ex-listeners get 30

3128

02:04:32,750 --> 02:04:31,119

off by using the promo code xvip

3129

02:04:37,060 --> 02:04:32,760

that's cape

3130

02:04:39,510 --> 02:04:37,070

events.com promo code xvip

3131

02:04:41,589 --> 02:04:39,520

[Music]

3132

02:04:44,229 --> 02:04:41,599

when you take the beans from central

3133

02:04:46,709 --> 02:04:44,239

america with dashes of indonesian and

3134

02:04:49,830 --> 02:04:46,719

african mixed in and then roasted to the

3135

02:04:52,390 --> 02:04:49,840

dark side of fade to black you create

3136

02:04:55,350 --> 02:04:52,400

the ultimate brew of fringe

3137

02:04:57,030 --> 02:04:55,360

introducing the fade to black blend from

3138

02:04:59,990 --> 02:04:57,040

river moon coffee

3139

02:05:02,709 --> 02:05:00,000

yes river moon's darkest customized

3140

02:05:04,229 --> 02:05:02,719

roast was created for the love of fade

3141

02:05:06,790 --> 02:05:04,239

to black

3142

02:05:09,430 --> 02:05:06,800

the alchemy of masterful roasting and

3143

02:05:12,950 --> 02:05:09,440

smoking the beans is in every sip of

3144

02:05:14,390 --> 02:05:12,960

this full-bodied dark java i need my

3145

02:05:16,950 --> 02:05:14,400

coffee doc

3146

02:05:19,990 --> 02:05:16,960

deep with distinct bittersweet chocolate

3147

02:05:22,470 --> 02:05:20,000

highlights just like the bunker leaning

3148

02:05:25,109 --> 02:05:22,480

further into the darkness of the roast

3149

02:05:27,790 --> 02:05:25,119

is fade to black blend from river moon

3150

02:05:29,750 --> 02:05:27,800

coffee just click on the banner at

3151
02:05:33,510 --> 02:05:29,760
jimmychurchradio.com and use the promo

3152
02:05:43,830 --> 02:05:33,520
code f2b blend for 15 off of your order

3153
02:05:49,430 --> 02:05:45,669
you want to know a secret

3154
02:05:50,790 --> 02:05:49,440
i love police i really love ponies i'm

3155
02:05:53,030 --> 02:05:50,800
serious

3156
02:05:54,390 --> 02:05:53,040
i couldn't stay sane without pawn mr

3157
02:05:56,470 --> 02:05:54,400
brush

3158
02:06:02,950 --> 02:05:56,480
why fade to black

3159
02:06:08,910 --> 02:06:05,109
this is fade to black with jimmy church

3160
02:06:22,149 --> 02:06:08,920
on the game changer radio network

3161
02:06:27,750 --> 02:06:24,790
i gotta stretch my brain muscles i gotta

3162
02:06:29,430 --> 02:06:27,760
it's isaac arthur i gotta kind of strike

3163
02:06:32,149 --> 02:06:29,440

i gotta get the blood

3164

02:06:33,910 --> 02:06:32,159

into my frontal lobes it's the only way

3165

02:06:35,189 --> 02:06:33,920

i can make it through this show

3166

02:06:36,950 --> 02:06:35,199

it's uh

3167

02:06:39,589 --> 02:06:36,960

you know i'm just being honest with

3168

02:06:41,589 --> 02:06:39,599

everybody uh isaac man you make me you

3169

02:06:43,830 --> 02:06:41,599

make me think

3170

02:06:46,950 --> 02:06:43,840

and and and you do that with everybody

3171

02:06:47,990 --> 02:06:46,960

and that is uh that's the success of

3172

02:06:50,550 --> 02:06:48,000

your show

3173

02:06:52,149 --> 02:06:50,560

uh you you cause people to think even

3174

02:06:53,350 --> 02:06:52,159

though you're a complete debunking

3175

02:06:54,229 --> 02:06:53,360

skeptic

3176

02:06:56,950 --> 02:06:54,239

um

3177

02:06:59,189 --> 02:06:56,960

uh with uh with all of that one day man

3178

02:07:01,109 --> 02:06:59,199

i'm gonna get you abducted and it's

3179

02:07:03,589 --> 02:07:01,119

gonna be a whole nother science and

3180

02:07:05,669 --> 02:07:03,599

futurism with isaac arthur it's gonna be

3181

02:07:08,390 --> 02:07:05,679

a whole another show my man

3182

02:07:09,350 --> 02:07:08,400

um okay how

3183

02:07:13,350 --> 02:07:09,360

how

3184

02:07:17,589 --> 02:07:13,360

would be

3185

02:07:19,750 --> 02:07:17,599

is uh i'm i'm gonna travel back in time

3186

02:07:21,669 --> 02:07:19,760

and i'm gonna go back to the 1950s i'm

3187

02:07:23,990 --> 02:07:21,679

gonna hit a nice beach

3188

02:07:26,790 --> 02:07:24,000

and look at the invention of the bikini

3189

02:07:30,069 --> 02:07:26,800

and have pina coladas and

3190

02:07:31,750 --> 02:07:30,079

and and i've got my my beach wear on and

3191

02:07:33,830 --> 02:07:31,760

then

3192

02:07:35,910 --> 02:07:33,840

i'm out in space and i get to look at it

3193

02:07:39,270 --> 02:07:35,920

for about a tenth of a second before i'm

3194

02:07:42,470 --> 02:07:39,280

frozen solid and i would be like what

3195

02:07:47,350 --> 02:07:44,390

you probably have about 30 seconds or so

3196

02:07:50,390 --> 02:07:47,360

that's how you call this yes

3197

02:07:53,990 --> 02:07:50,400

30 seconds to just freak out right just

3198

02:07:55,669 --> 02:07:54,000

lose my mind but but but how can we be

3199

02:07:58,550 --> 02:07:55,679

assured of that uh

3200

02:08:01,910 --> 02:07:58,560

you know were not only

3201

02:08:04,629 --> 02:08:01,920

um is the earth orbiting the sun we know

3202

02:08:06,069 --> 02:08:04,639

that but the earth is also rotating yep

3203

02:08:08,149 --> 02:08:06,079

so you want to make sure that you're not

3204

02:08:10,790 --> 02:08:08,159

in the middle of the pacific ocean uh

3205

02:08:12,629 --> 02:08:10,800

when you land how do we prevent this i

3206

02:08:13,990 --> 02:08:12,639

can see it worse now you try to like uh

3207

02:08:16,390 --> 02:08:14,000

like let's say i'm stepping through a

3208

02:08:18,069 --> 02:08:16,400

wormhole gate to another location if the

3209

02:08:20,069 --> 02:08:18,079

speeds of those things aren't matched

3210

02:08:21,830 --> 02:08:20,079

properly you know your classic wormhole

3211

02:08:23,750 --> 02:08:21,840

gate like you see in stargaze you step

3212

02:08:24,870 --> 02:08:23,760

outside the thing and you're moving 500

3213

02:08:26,790 --> 02:08:24,880

miles an hour because that's the

3214

02:08:28,229 --> 02:08:26,800

relative difference in speeds or you

3215

02:08:30,229 --> 02:08:28,239

jump across the edge of the universe

3216

02:08:32,470 --> 02:08:30,239

where everything's moving away from us

3217

02:08:33,830 --> 02:08:32,480

at say 99 of light speed you step out

3218

02:08:36,149 --> 02:08:33,840

and kaboom

3219

02:08:38,069 --> 02:08:36,159

isaac asimov had the best answer for

3220

02:08:40,390 --> 02:08:38,079

this one there was a hand wave he said

3221

02:08:42,709 --> 02:08:40,400

you this was in his novel in eternity

3222

02:08:44,310 --> 02:08:42,719

which is is probably the the best one

3223

02:08:46,390 --> 02:08:44,320

besides asian wells time machine out

3224

02:08:47,750 --> 02:08:46,400

there for time travel

3225

02:08:49,589 --> 02:08:47,760

and uh the idea is that you're just

3226

02:08:51,430 --> 02:08:49,599

going to be following along with time

3227

02:08:53,109 --> 02:08:51,440

the gravity of your plan doesn't go away

3228

02:08:53,990 --> 02:08:53,119

you're stuck with it and you move with

3229

02:08:55,510 --> 02:08:54,000

it

3230

02:08:56,709 --> 02:08:55,520

and since there is no

3231

02:08:58,390 --> 02:08:56,719

center of the universe that we're aware

3232

02:09:00,310 --> 02:08:58,400

of anyway that every place is

3233

02:09:01,669 --> 02:09:00,320

effectively is a good location to be the

3234

02:09:04,229 --> 02:09:01,679

centers anything else that there really

3235

02:09:05,510 --> 02:09:04,239

is all motions relative to each other

3236

02:09:07,270 --> 02:09:05,520

there's no particular reason to think

3237

02:09:09,830 --> 02:09:07,280

that if you jump back in time that you

3238

02:09:11,430 --> 02:09:09,840

would exit another location of course

3239

02:09:13,510 --> 02:09:11,440

that could be a problem too with fast

3240

02:09:14,790 --> 02:09:13,520

night travel is that it's based off of

3241

02:09:16,390 --> 02:09:14,800

jumping through a one horse you might

3242

02:09:18,870 --> 02:09:16,400

find yourself arriving at the exact same

3243

02:09:21,270 --> 02:09:18,880

location you left just backwards in time

3244

02:09:23,270 --> 02:09:21,280

and now you still got let's say from

3245

02:09:24,709 --> 02:09:23,280

doctor who had to walk around the long

3246

02:09:27,109 --> 02:09:24,719

way you know

3247

02:09:28,629 --> 02:09:27,119

so you jump back in time 100 light 100

3248

02:09:32,709 --> 02:09:28,639

years but now you have to go fly to your

3249

02:09:39,109 --> 02:09:36,709

insanely complex math uh to calculate

3250

02:09:41,109 --> 02:09:39,119

the position of the planet

3251

02:09:44,550 --> 02:09:41,119

relative to the year

3252

02:09:47,109 --> 02:09:44,560

um also the rotation of the planet so

3253

02:09:49,109 --> 02:09:47,119

you would have to calculate all of this

3254

02:09:51,990 --> 02:09:49,119

into your machine

3255

02:09:56,229 --> 02:09:52,000

for your destination so you do arrive

3256

02:10:01,109 --> 02:09:56,239

back on earth wherever it is in in the

3257

02:10:02,629 --> 02:10:01,119

calendar year and also the time of day

3258

02:10:04,790 --> 02:10:02,639

a few meters you arrived your foot in

3259

02:10:06,709 --> 02:10:04,800

the ground

3260

02:10:09,109 --> 02:10:06,719

or 100 feet above it

3261

02:10:11,750 --> 02:10:09,119

oh and and a building constructed on

3262

02:10:14,229 --> 02:10:11,760

your head that would that would uh

3263

02:10:15,830 --> 02:10:14,239

kind of or the lack of a building yeah i

3264

02:10:17,750 --> 02:10:15,840

mean from a friction standpoint you you

3265

02:10:20,310 --> 02:10:17,760

assume that you're kind of like stuck to

3266

02:10:22,870 --> 02:10:20,320

the location as it moves but from a

3267

02:10:24,390 --> 02:10:22,880

mathematical calculation point of view

3268

02:10:25,589 --> 02:10:24,400

the universe and every particle and is

3269

02:10:27,990 --> 02:10:25,599

expanding away from each other

3270

02:10:30,229 --> 02:10:28,000

simultaneously we are rotating around

3271

02:10:32,629 --> 02:10:30,239

the galaxy in a group of co-moving stars

3272

02:10:33,910 --> 02:10:32,639

that occasionally loses or gains members

3273

02:10:35,430 --> 02:10:33,920

and cross over a bunch of other ones

3274

02:10:37,510 --> 02:10:35,440

like alpha centauri is not one of our

3275

02:10:39,030 --> 02:10:37,520

national native members and it's always

3276

02:10:40,470 --> 02:10:39,040

been the closest star to us nor hasn't

3277

02:10:41,830 --> 02:10:40,480

always been that's right these things

3278

02:10:43,589 --> 02:10:41,840

are going to move and the planet

3279

02:10:45,589 --> 02:10:43,599

actually kind of corkscrews around the

3280

02:10:47,350 --> 02:10:45,599

galaxy as we move because

3281

02:10:48,950 --> 02:10:47,360

uh we don't actually orbit with the

3282

02:10:50,870 --> 02:10:48,960

plane of the galaxy i think most people

3283

02:10:53,270 --> 02:10:50,880

assume that earth is rotating along that

3284

02:10:55,030 --> 02:10:53,280

plane the sun does mostly it actually

3285

02:10:58,229 --> 02:10:55,040

bobs up and down as it goes like most

3286

02:11:01,189 --> 02:10:58,239

stars but um we rotate at kind of like a

3287

02:11:03,109 --> 02:11:01,199

cocked 60 degree angle off of that so if

3288

02:11:05,830 --> 02:11:03,119

you if you trace earth moving around the

3289

02:11:08,790 --> 02:11:05,840

galaxy center we look like a pig's tail

3290

02:11:12,229 --> 02:11:08,800

going around it and and the galaxy is

3291

02:11:14,310 --> 02:11:12,239

moving too yes and space is expanding i

3292

02:11:16,310 --> 02:11:14,320

mean all of this would have to be part

3293

02:11:18,470 --> 02:11:16,320

of your calculations

3294

02:11:21,669 --> 02:11:18,480

uh to make sure you arrive at the gate

3295

02:11:23,430 --> 02:11:21,679

that you want to step off on right it'll

3296

02:11:25,030 --> 02:11:23,440

be very hard to do that and and the

3297

02:11:26,870 --> 02:11:25,040

question is what are you actually fixing

3298

02:11:28,950 --> 02:11:26,880

the two and

3299

02:11:31,589 --> 02:11:28,960

here's another example i want to go

3300

02:11:33,510 --> 02:11:31,599

ahead and uh you know

3301

02:11:35,109 --> 02:11:33,520

replace myself onto some piece of object

3302

02:11:36,790 --> 02:11:35,119

because i can't move mass back in time i

3303

02:11:38,470 --> 02:11:36,800

can just move data patterns so i'm going

3304

02:11:40,470 --> 02:11:38,480

to teleport back to something how

3305

02:11:43,270 --> 02:11:40,480

exactly am i actually managing to figure

3306

02:11:44,629 --> 02:11:43,280

out which atoms are where on me and on

3307

02:11:46,550 --> 02:11:44,639

some distant object that i'm going to

3308

02:11:48,149 --> 02:11:46,560

switch places with so to speak or

3309

02:11:50,390 --> 02:11:48,159

realign especially because they move

3310

02:11:53,589 --> 02:11:50,400

around you know people talk about like

3311

02:11:56,069 --> 02:11:53,599

roku's vasculus or locos bacillus where

3312

02:11:58,550 --> 02:11:56,079

some future ai is going to

3313

02:11:59,910 --> 02:11:58,560

uh resurrect you from you know the

3314

02:12:02,149 --> 02:11:59,920

calculating where every animal your

3315

02:12:04,310 --> 02:12:02,159

brain was that's not how that works you

3316

02:12:06,390 --> 02:12:04,320

know you uh you're not static in terms

3317

02:12:08,709 --> 02:12:06,400

of your brain like that if you vaporize

3318

02:12:10,149 --> 02:12:08,719

somebody's head or leave them in a crypt

3319

02:12:11,350 --> 02:12:10,159

their brain is scattered around things

3320

02:12:14,149 --> 02:12:11,360

that would be so complicated to

3321

02:12:15,910 --> 02:12:14,159

calculate even a non-quantum universe

3322

02:12:17,910 --> 02:12:15,920

that you need a computer bigger than the

3323

02:12:19,109 --> 02:12:17,920

universe to do it and that's probably

3324

02:12:20,790 --> 02:12:19,119

what's going to work out with that one

3325

02:12:22,870 --> 02:12:20,800

too is if you want to teleport things

3326

02:12:24,950 --> 02:12:22,880

around through space and time you would

3327

02:12:26,470 --> 02:12:24,960

probably need a computer that was more

3328

02:12:28,950 --> 02:12:26,480

powerful than anything you could

3329

02:12:31,189 --> 02:12:28,960

actually have in it okay that that was

3330

02:12:33,189 --> 02:12:31,199

five poo poos tonight that you've done

3331

02:12:35,589 --> 02:12:33,199

on this whole thing and we're not going

3332

02:12:37,189 --> 02:12:35,599

to get to number six and i'm i'm i'm

3333

02:12:42,149 --> 02:12:37,199

gonna tell you why

3334

02:12:43,109 --> 02:12:42,159

um there has to be let's let's shift

3335

02:12:45,030 --> 02:12:43,119

this

3336

02:12:47,270 --> 02:12:45,040

to

3337

02:12:48,950 --> 02:12:47,280

uh an exoplanet that's just been

3338

02:12:51,669 --> 02:12:48,960

discovered okay

3339

02:12:54,069 --> 02:12:51,679

and and one of the things that we hear a

3340

02:12:57,109 --> 02:12:54,079

lot with exoplanets

3341

02:12:59,910 --> 02:12:57,119

is that it's its orbit around its host

3342

02:13:02,550 --> 02:12:59,920

star is three days right we hear these

3343

02:13:05,270 --> 02:13:02,560

numbers right

3344

02:13:07,790 --> 02:13:05,280

so we we try to imagine

3345

02:13:11,030 --> 02:13:07,800

that because here it takes a year takes

3346

02:13:12,550 --> 02:13:11,040

305 days for us to do it and just

3347

02:13:15,270 --> 02:13:12,560

imagine

3348

02:13:17,990 --> 02:13:15,280

that happening

3349

02:13:20,310 --> 02:13:18,000

over a three-day period right that's

3350

02:13:21,270 --> 02:13:20,320

like that's that's an insane amount of

3351

02:13:23,189 --> 02:13:21,280

speed

3352

02:13:26,629 --> 02:13:23,199

but we hear it over and over again

3353

02:13:29,910 --> 02:13:26,639

apparently earth is very very slow

3354

02:13:32,790 --> 02:13:29,920

trying to catch a transiting star

3355

02:13:35,350 --> 02:13:32,800

at earth speed we'd have to wait a year

3356

02:13:37,750 --> 02:13:35,360

for that transit to come back around if

3357

02:13:40,069 --> 02:13:37,760

we suspected a planet being there that's

3358

02:13:41,910 --> 02:13:40,079

just the way it is but

3359

02:13:43,510 --> 02:13:41,920

and here's here's the thing here's the

3360

02:13:47,510 --> 02:13:43,520

rub

3361

02:13:50,550 --> 02:13:47,520

if you and i it's a perfect earth rocky

3362

02:13:53,109 --> 02:13:50,560

planet oxygen nitrogen

3363

02:13:56,310 --> 02:13:53,119

everything's there water atmosphere

3364

02:13:57,430 --> 02:13:56,320

biosphere things are growing type m

3365

02:13:59,430 --> 02:13:57,440

planets

3366

02:14:02,069 --> 02:13:59,440

perfect man perfect they even have

3367

02:14:03,589 --> 02:14:02,079

casinos but you and i

3368

02:14:04,790 --> 02:14:03,599

go there

3369

02:14:07,189 --> 02:14:04,800

and we

3370

02:14:08,950 --> 02:14:07,199

with our body

3371

02:14:11,109 --> 02:14:08,960

in our dna

3372

02:14:13,030 --> 02:14:11,119

right and we're used to the sun rising

3373

02:14:15,109 --> 02:14:13,040

and setting in the east and the west in

3374

02:14:18,229 --> 02:14:15,119

our years and our days and 24-hour

3375

02:14:21,669 --> 02:14:18,239

cycles and we age a certain way

3376

02:14:23,189 --> 02:14:21,679

we go onto a planet that is orbiting its

3377

02:14:28,229 --> 02:14:23,199

sun

3378

02:14:30,550 --> 02:14:28,239

its year is three days happens to time

3379

02:14:32,149 --> 02:14:30,560

it will be running slightly slower there

3380

02:14:34,149 --> 02:14:32,159

uh but not as much as you're probably

3381

02:14:36,390 --> 02:14:34,159

thinking what's happening there is it

3382

02:14:38,229 --> 02:14:36,400

orbits very quick because how fast you

3383

02:14:39,990 --> 02:14:38,239

orbit a star is mostly based how close

3384

02:14:40,709 --> 02:14:40,000

you are to it and what that star's mass

3385

02:14:41,750 --> 02:14:40,719

is

3386

02:14:43,430 --> 02:14:41,760

um

3387

02:14:46,229 --> 02:14:43,440

a planet that was actually habitable and

3388

02:14:48,790 --> 02:14:46,239

orbited a star in three of all days uh

3389

02:14:50,950 --> 02:14:48,800

timeline wise you know 72 hours that

3390

02:14:54,069 --> 02:14:50,960

would only be possible around the very

3391

02:14:55,589 --> 02:14:54,079

tiniest of red dwarfs you're like m9s

3392

02:14:58,229 --> 02:14:55,599

everywhere else such a planet would be

3393

02:14:59,910 --> 02:14:58,239

scorching hot and uh this is one of the

3394

02:15:01,510 --> 02:14:59,920

parts of the exoplanets is that it's

3395

02:15:03,589 --> 02:15:01,520

easier to see ones that are very close

3396

02:15:05,669 --> 02:15:03,599

to their sun and it's very easy to see

3397

02:15:07,109 --> 02:15:05,679

once they're very big as a result of

3398

02:15:09,430 --> 02:15:07,119

which almost all the exoplanets we've

3399

02:15:12,709 --> 02:15:09,440

seen thus far are either very big

3400

02:15:13,990 --> 02:15:12,719

jupiter-like planets or very hot or both

3401

02:15:15,589 --> 02:15:14,000

and it's not that we think those are

3402

02:15:17,350 --> 02:15:15,599

particularly normal and common compared

3403

02:15:18,069 --> 02:15:17,360

to stars like or plants like oh this is

3404

02:15:19,910 --> 02:15:18,079

just

3405

02:15:22,069 --> 02:15:19,920

it's easier to see the giant boating

3406

02:15:25,669 --> 02:15:22,079

planet than it is the tiny comfortable

3407

02:15:27,430 --> 02:15:25,679

one um but uh in the case of like that

3408

02:15:29,990 --> 02:15:27,440

case your time's not moving that much

3409

02:15:32,390 --> 02:15:30,000

slower even near the sun i think it's

3410

02:15:34,390 --> 02:15:32,400

i'd have to run the numbers but it'd be

3411

02:15:35,910 --> 02:15:34,400

not much not enough that you you could

3412

02:15:38,709 --> 02:15:35,920

catch it on your watch over the course

3413

02:15:40,470 --> 02:15:38,719

of a year of high speeds um but not very

3414

02:15:43,910 --> 02:15:40,480

big and

3415

02:15:46,870 --> 02:15:43,920

what but what if we lived there

3416

02:15:48,629 --> 02:15:46,880

for in earth time what if we lived there

3417

02:15:51,270 --> 02:15:48,639

for five years

3418

02:15:55,109 --> 02:15:51,280

and then we experience that does our dna

3419

02:15:58,390 --> 02:15:55,119

alter do it does our star the aging of

3420

02:15:59,510 --> 02:15:58,400

our shell cells and and and our aging

3421

02:16:01,589 --> 02:15:59,520

process

3422

02:16:03,750 --> 02:16:01,599

does that then get altered in other

3423

02:16:05,830 --> 02:16:03,760

words after that five years we come back

3424

02:16:06,870 --> 02:16:05,840

here to earth and and and we haven't

3425

02:16:09,189 --> 02:16:06,880

aged

3426

02:16:10,870 --> 02:16:09,199

uh a minute

3427

02:16:12,709 --> 02:16:10,880

because we spent five years on that

3428

02:16:14,550 --> 02:16:12,719

planet if it's i mean that you could

3429

02:16:16,470 --> 02:16:14,560

have a planet where there was a uh

3430

02:16:18,390 --> 02:16:16,480

natural organism that latched on to

3431

02:16:20,550 --> 02:16:18,400

things and automatically reconstructed

3432

02:16:21,750 --> 02:16:20,560

people's dnas that in age you know

3433

02:16:23,910 --> 02:16:21,760

there's a lot of weird things you have

3434

02:16:25,750 --> 02:16:23,920

on alien planets that's almost by

3435

02:16:27,830 --> 02:16:25,760

definition what the what alien would

3436

02:16:29,669 --> 02:16:27,840

mean by that case but there should be

3437

02:16:31,350 --> 02:16:29,679

anything too weird about that planet

3438

02:16:32,790 --> 02:16:31,360

most of the time

3439

02:16:34,230 --> 02:16:32,800

uh life that you would have from that

3440

02:16:36,070 --> 02:16:34,240

journey would be from the journey you

3441

02:16:37,830 --> 02:16:36,080

get to the planet and you've lost so

3442

02:16:38,790 --> 02:16:37,840

much time on your end of things or

3443

02:16:40,709 --> 02:16:38,800

gained it depending how you want to look

3444

02:16:43,509 --> 02:16:40,719

at it you know maybe you lost

3445

02:16:45,589 --> 02:16:43,519

two years on a travel time of 20 uh and

3446

02:16:47,669 --> 02:16:45,599

you get that second loss on the way back

3447

02:16:49,429 --> 02:16:47,679

to two more years but you probably won't

3448

02:16:50,950 --> 02:16:49,439

get even a plant that's got that much

3449

02:16:52,070 --> 02:16:50,960

time dilation from being that close to a

3450

02:16:53,669 --> 02:16:52,080

stall

3451
02:16:55,349 --> 02:16:53,679
again i'd have to run the numbers so we

3452
02:16:56,629 --> 02:16:55,359
take the grain of salt but we might be

3453
02:16:58,629 --> 02:16:56,639
talking about a few minutes over the

3454
02:16:59,910 --> 02:16:58,639
course of a year on the high end of that

3455
02:17:02,150 --> 02:16:59,920
you really have to get close to the

3456
02:17:04,309 --> 02:17:02,160
freak like if i put a planet around a

3457
02:17:05,509 --> 02:17:04,319
black hole one whose accretion disc is a

3458
02:17:07,750 --> 02:17:05,519
lot here which i think was what they did

3459
02:17:09,030 --> 02:17:07,760
with the uh one of their stellar um

3460
02:17:10,790 --> 02:17:09,040
although i'd have been quite clear on

3461
02:17:12,549 --> 02:17:10,800
how that wasn't gamma radiation killing

3462
02:17:13,669 --> 02:17:12,559
them but whatever the case is you got a

3463
02:17:15,270 --> 02:17:13,679

plan around the black hole and you could

3464

02:17:16,469 --> 02:17:15,280

have those you know plants can survive

3465

02:17:18,709 --> 02:17:16,479

supernova

3466

02:17:20,469 --> 02:17:18,719

uh if it was very close and it was a

3467

02:17:22,790 --> 02:17:20,479

very big black hole

3468

02:17:24,870 --> 02:17:22,800

yes you could potentially have really

3469

02:17:26,309 --> 02:17:24,880

high time dilation around that but

3470

02:17:27,270 --> 02:17:26,319

otherwise if it's a living surface

3471

02:17:29,190 --> 02:17:27,280

planet

3472

02:17:31,270 --> 02:17:29,200

not really i think um

3473

02:17:33,270 --> 02:17:31,280

roberto ford's novel dragon's egg which

3474

02:17:35,830 --> 02:17:33,280

is actually set with life on a neutron

3475

02:17:37,750 --> 02:17:35,840

star uh they are the times running so

3476

02:17:39,830 --> 02:17:37,760

slow that they actually can

3477

02:17:41,429 --> 02:17:39,840

experience uh you know less time as

3478

02:17:43,910 --> 02:17:41,439

they're passing by but still faster for

3479

02:17:46,469 --> 02:17:43,920

them in the context of this so tiny and

3480

02:17:48,549 --> 02:17:46,479

microscopic that they effectively live

3481

02:17:50,549 --> 02:17:48,559

faster as a war we usually say in this

3482

02:17:53,509 --> 02:17:50,559

kind of context with organisms that by

3483

02:17:54,309 --> 02:17:53,519

default uh their sense of time is linear

3484

02:17:56,709 --> 02:17:54,319

to

3485

02:17:58,629 --> 02:17:56,719

their their size or height or length and

3486

02:18:00,870 --> 02:17:58,639

so you're making organisms 10 times

3487

02:18:02,469 --> 02:18:00,880

taller or one tenth is high its

3488

02:18:04,950 --> 02:18:02,479

effective sense of time would be about

3489

02:18:06,230 --> 02:18:04,960

10 or or 10 times more than ours just

3490

02:18:07,429 --> 02:18:06,240

because they can react faster to

3491

02:18:08,790 --> 02:18:07,439

everything including how fast their

3492

02:18:10,629 --> 02:18:08,800

blade would think

3493

02:18:14,230 --> 02:18:10,639

one of the uh

3494

02:18:17,270 --> 02:18:14,240

mission uh statements uh for stern uh

3495

02:18:20,230 --> 02:18:17,280

cern and the large hadron collider

3496

02:18:22,629 --> 02:18:20,240

is uh einstein

3497

02:18:25,990 --> 02:18:22,639

and uh space and time

3498

02:18:28,870 --> 02:18:26,000

um and on the on the list now we have

3499

02:18:30,870 --> 02:18:28,880

dark matter and dark energy is is there

3500

02:18:31,990 --> 02:18:30,880

of course we have black holes

3501

02:18:34,629 --> 02:18:32,000

and

3502

02:18:37,429 --> 02:18:34,639

they are trying to

3503

02:18:39,110 --> 02:18:37,439

not only prove relativity but they want

3504

02:18:41,190 --> 02:18:39,120

to better

3505

02:18:44,150 --> 02:18:41,200

understand time

3506

02:18:46,950 --> 02:18:44,160

is there is there a danger of

3507

02:18:51,429 --> 02:18:46,960

of discovering dark matter and dark

3508

02:18:53,750 --> 02:18:51,439

energy and and these components

3509

02:18:55,669 --> 02:18:53,760

in in a in a laboratory setting like

3510

02:18:57,990 --> 02:18:55,679

that where you're flipping the switch

3511

02:18:59,030 --> 02:18:58,000

and you're waiting to see what could

3512

02:19:02,070 --> 02:18:59,040

happen

3513

02:19:05,110 --> 02:19:02,080

is is this a bad idea and and could they

3514

02:19:07,349 --> 02:19:05,120

alter time on cern as we understand it

3515

02:19:08,870 --> 02:19:07,359

on this planet and if they did would we

3516

02:19:12,790 --> 02:19:08,880

even know it

3517

02:19:14,150 --> 02:19:12,800

i mean yes no and yes respectively um

3518

02:19:15,750 --> 02:19:14,160

there's always a danger when you're

3519

02:19:17,190 --> 02:19:15,760

trying to find out the physical laws of

3520

02:19:19,030 --> 02:19:17,200

the universe and you don't actually know

3521

02:19:20,389 --> 02:19:19,040

them all and you start creating

3522

02:19:23,349 --> 02:19:20,399

circumstances that are meant to check

3523

02:19:25,190 --> 02:19:23,359

your theories uh if your theory is wrong

3524

02:19:26,309 --> 02:19:25,200

uh then you may get a result that you

3525

02:19:27,669 --> 02:19:26,319

weren't expecting that could be a

3526

02:19:28,950 --> 02:19:27,679

dangerous one

3527

02:19:30,389 --> 02:19:28,960

there really shouldn't be much of one

3528

02:19:31,509 --> 02:19:30,399

from what they are doing the energies

3529

02:19:33,190 --> 02:19:31,519

involved are

3530

02:19:34,469 --> 02:19:33,200

not that far out from where we are

3531

02:19:35,750 --> 02:19:34,479

theoretically so we're not really

3532

02:19:37,509 --> 02:19:35,760

expecting them to create a black hole

3533

02:19:38,629 --> 02:19:37,519

it's going to suck the planet up

3534

02:19:40,230 --> 02:19:38,639

um

3535

02:19:41,750 --> 02:19:40,240

any of you made a little tiny black hole

3536

02:19:43,910 --> 02:19:41,760

and it didn't expire from hockey

3537

02:19:45,750 --> 02:19:43,920

radiation it would still take millions

3538

02:19:47,429 --> 02:19:45,760

of years to eat the planet i think the

3539

02:19:49,190 --> 02:19:47,439

last calculation for

3540

02:19:50,790 --> 02:19:49,200

micro black hole that was subatomic

3541

02:19:52,550 --> 02:19:50,800

would be the need longer than the earth

3542

02:19:54,389 --> 02:19:52,560

has left to eat the planet

3543

02:19:56,309 --> 02:19:54,399

it's just a very slow process until they

3544

02:19:57,590 --> 02:19:56,319

get bigger um

3545

02:19:58,870 --> 02:19:57,600

you know it's hard to absorb atoms if

3546

02:20:00,070 --> 02:19:58,880

you're smaller than they are and people

3547

02:20:02,309 --> 02:20:00,080

forget that black holes don't really

3548

02:20:04,150 --> 02:20:02,319

suck things in black holes have the same

3549

02:20:05,990 --> 02:20:04,160

gravity that any object has it's just

3550

02:20:07,670 --> 02:20:06,000

you get a lot closer than a black hole

3551

02:20:09,510 --> 02:20:07,680

safer to be around close to you than a

3552

02:20:10,389 --> 02:20:09,520

star of the same masses

3553

02:20:11,910 --> 02:20:10,399

um

3554

02:20:14,550 --> 02:20:11,920

and it's certainly safer than the cell

3555

02:20:16,309 --> 02:20:14,560

was made from that said uh do i think we

3556

02:20:17,670 --> 02:20:16,319

should be doing the research yeah yeah i

3557

02:20:19,750 --> 02:20:17,680

don't think it's too big of a risk but

3558

02:20:21,349 --> 02:20:19,760

yes it is risky and and i

3559

02:20:23,110 --> 02:20:21,359

would before people not just say oh no

3560

02:20:24,469 --> 02:20:23,120

there's no risk to sown at all you're

3561

02:20:25,990 --> 02:20:24,479

playing out the edge of physics in a

3562

02:20:28,389 --> 02:20:26,000

high energy facility like that yeah

3563

02:20:30,389 --> 02:20:28,399

there's always something there but

3564

02:20:31,910 --> 02:20:30,399

tiny you know it's one of those it's the

3565

02:20:34,070 --> 02:20:31,920

risk we don't know about the unknown

3566

02:20:35,349 --> 02:20:34,080

unknown kind of thing uh as to whether

3567

02:20:37,670 --> 02:20:35,359

or not you if they did something to

3568

02:20:39,750 --> 02:20:37,680

change reality we didn't know about it

3569

02:20:42,710 --> 02:20:39,760

well we we don't know about it

3570

02:20:44,469 --> 02:20:42,720

right that's exactly it we wouldn't uh

3571

02:20:46,070 --> 02:20:44,479

we wouldn't know

3572

02:20:48,070 --> 02:20:46,080

um and

3573

02:20:50,309 --> 02:20:48,080

uh i think that the anti-matter

3574

02:20:54,630 --> 02:20:50,319

experiments and they do they collected

3575

02:20:57,510 --> 02:20:54,640

antimatter put it in a magnetic box

3576

02:21:00,230 --> 02:20:57,520

suspended um but that is messing with

3577

02:21:01,670 --> 02:21:00,240

something that you simply honestly don't

3578

02:21:05,349 --> 02:21:01,680

understand

3579

02:21:07,670 --> 02:21:05,359

and if if uh a black hole micro black

3580

02:21:09,670 --> 02:21:07,680

hole which they have created by the way

3581

02:21:10,870 --> 02:21:09,680

so they go and they do

3582

02:21:13,510 --> 02:21:10,880

how do you

3583

02:21:14,710 --> 02:21:13,520

uh run with that high level of

3584

02:21:16,389 --> 02:21:14,720

confidence

3585

02:21:18,230 --> 02:21:16,399

that one of these black holes just

3586

02:21:20,150 --> 02:21:18,240

doesn't spin out of control starts

3587

02:21:21,110 --> 02:21:20,160

eating the other black on the next thing

3588

02:21:23,990 --> 02:21:21,120

you know

3589

02:21:27,349 --> 02:21:24,000

it is really big and then

3590

02:21:30,230 --> 02:21:27,359

cern is is a pit in the ground

3591

02:21:31,590 --> 02:21:30,240

right i mean how do how do we how do we

3592

02:21:33,750 --> 02:21:31,600

not

3593

02:21:35,429 --> 02:21:33,760

what are the safeguards i i don't think

3594

02:21:37,590 --> 02:21:35,439

they they they've claimed or created a

3595

02:21:39,429 --> 02:21:37,600

black hole yet uh and i don't think

3596

02:21:41,110 --> 02:21:39,439

they're aiming for that per se but let's

3597

02:21:43,030 --> 02:21:41,120

say that did happen you make a black

3598

02:21:44,790 --> 02:21:43,040

hole and it emerges to another black

3599

02:21:46,950 --> 02:21:44,800

hole that's actually the most energetic

3600

02:21:48,550 --> 02:21:46,960

events in the universe when you get two

3601
02:21:50,070 --> 02:21:48,560
black holes merging together the amount

3602
02:21:52,550 --> 02:21:50,080
of energy released

3603
02:21:54,550 --> 02:21:52,560
is more than the entire every star in

3604
02:21:55,910 --> 02:21:54,560
the observable universe emits during

3605
02:21:57,670 --> 02:21:55,920
that same moment and that's how high

3606
02:21:59,750 --> 02:21:57,680
that is the funny thing is that might

3607
02:22:01,590 --> 02:21:59,760
not be fatal to be passed around people

3608
02:22:03,510 --> 02:22:01,600
tend to forget that the earth has this

3609
02:22:05,990 --> 02:22:03,520
huge gravity exchange with the sun or

3610
02:22:07,830 --> 02:22:06,000
the moon constantly we only see a tiny

3611
02:22:10,469 --> 02:22:07,840
little bit of that that ebbs off is like

3612
02:22:12,710 --> 02:22:10,479
heat from tidal heating but the amount

3613
02:22:14,870 --> 02:22:12,720

of energy that's in the sun sorry in the

3614

02:22:17,030 --> 02:22:14,880

planet to orbit the sun is about 10 to

3615

02:22:18,389 --> 02:22:17,040

30 joules i don't know how many uh off

3616

02:22:20,309 --> 02:22:18,399

the top i had how many mega tons of

3617

02:22:21,670 --> 02:22:20,319

nuclear bomb there is let's say about a

3618

02:22:23,110 --> 02:22:21,680

quadrillion

3619

02:22:25,910 --> 02:22:23,120

megaton nuclear bombs i think that's

3620

02:22:27,670 --> 02:22:25,920

about the right ballpark um

3621

02:22:29,429 --> 02:22:27,680

that is how much energy is for us to be

3622

02:22:32,309 --> 02:22:29,439

this far from the sun if we're suddenly

3623

02:22:34,150 --> 02:22:32,319

one percent close to the sun our

3624

02:22:35,990 --> 02:22:34,160

energy has risen by about one percent of

3625

02:22:37,910 --> 02:22:36,000

that in terms of gravitational potential

3626

02:22:39,830 --> 02:22:37,920

and we exchange that with the sun

3627

02:22:41,429 --> 02:22:39,840

well we actually do move a lot more than

3628

02:22:43,910 --> 02:22:41,439

one percent closer to the sun further

3629

02:22:45,510 --> 02:22:43,920

away every time we orbit it we are

3630

02:22:47,910 --> 02:22:45,520

actually close to the sun in january

3631

02:22:49,670 --> 02:22:47,920

which surprises people but it's

3632

02:22:52,070 --> 02:22:49,680

why it's warmer in the south hemisphere

3633

02:22:53,590 --> 02:22:52,080

so to speak um but that's a huge amount

3634

02:22:54,710 --> 02:22:53,600

of energy being exchanged we barely

3635

02:22:56,469 --> 02:22:54,720

notice it because almost none of it

3636

02:22:59,030 --> 02:22:56,479

actually radiates away as heat energy

3637

02:23:01,750 --> 02:22:59,040

which interacts with our molecules

3638

02:23:05,110 --> 02:23:01,760

um black holes have a lot of energy and

3639

02:23:07,270 --> 02:23:05,120

they release a ton when they merge but

3640

02:23:09,910 --> 02:23:07,280

it really isn't the sort of thing that

3641

02:23:12,230 --> 02:23:09,920

is it's this you know if you have a

3642

02:23:15,190 --> 02:23:12,240

black hole that has the mass of one atom

3643

02:23:17,990 --> 02:23:15,200

or one gram it still only has that much

3644

02:23:19,510 --> 02:23:18,000

energy in it it's a lot by einstein but

3645

02:23:20,870 --> 02:23:19,520

still very tiny

3646

02:23:22,070 --> 02:23:20,880

you know so if you make a black hole

3647

02:23:23,830 --> 02:23:22,080

that's got

3648

02:23:25,910 --> 02:23:23,840

one gram worth of matter that's still

3649

02:23:27,990 --> 02:23:25,920

only going to be um

3650

02:23:29,030 --> 02:23:28,000

10 to 14 joules of energy in its release

3651

02:23:33,349 --> 02:23:29,040

which is

3652

02:23:37,510 --> 02:23:35,429

i was running some of those calculations

3653

02:23:40,790 --> 02:23:37,520

today and looking at terra electron

3654

02:23:42,790 --> 02:23:40,800

volts and and and in the conversion and

3655

02:23:43,830 --> 02:23:42,800

i was doing it doing it backward and

3656

02:23:47,510 --> 02:23:43,840

forwards

3657

02:23:50,309 --> 02:23:47,520

and then really started to contemplate

3658

02:23:51,990 --> 02:23:50,319

the amount of energy that is fired up at

3659

02:23:56,070 --> 02:23:52,000

the lhc

3660

02:23:58,550 --> 02:23:56,080

it is crazy i mean it is a ginormous

3661

02:24:01,030 --> 02:23:58,560

amount of energy and then getting these

3662

02:24:01,990 --> 02:24:01,040

protons moving in opposite directions

3663

02:24:05,030 --> 02:24:02,000

and then

3664

02:24:07,110 --> 02:24:05,040

colliding which is its job

3665

02:24:09,590 --> 02:24:07,120

uh not knowing what the results are

3666

02:24:11,110 --> 02:24:09,600

going to be and just kicking back to see

3667

02:24:13,670 --> 02:24:11,120

what the action is

3668

02:24:16,790 --> 02:24:13,680

is there a possibility with these kind

3669

02:24:19,830 --> 02:24:16,800

of collisions that you could open up a

3670

02:24:22,870 --> 02:24:19,840

portal that you could connect a two

3671

02:24:24,070 --> 02:24:22,880

dimensions or two multiverses

3672

02:24:27,270 --> 02:24:24,080

and allow

3673

02:24:29,030 --> 02:24:27,280

things entities life to pass through in

3674

02:24:31,590 --> 02:24:29,040

in both directions

3675

02:24:33,990 --> 02:24:31,600

that would be cool

3676

02:24:36,070 --> 02:24:34,000

possibly fatal but still cool i mean yes

3677

02:24:37,349 --> 02:24:36,080

yes there is a possibility you know

3678

02:24:39,510 --> 02:24:37,359

again that's that we're playing around

3679

02:24:40,630 --> 02:24:39,520

the edge of science thing i i'd take a

3680

02:24:42,710 --> 02:24:40,640

moment to say

3681

02:24:44,070 --> 02:24:42,720

that thing uses up so much energy that

3682

02:24:45,910 --> 02:24:44,080

they have to plot what time of year

3683

02:24:47,270 --> 02:24:45,920

they're turning it on so that everyone

3684

02:24:49,830 --> 02:24:47,280

can run their air conditioners in the

3685

02:24:53,510 --> 02:24:49,840

country it goes through um you know it

3686

02:24:55,910 --> 02:24:53,520

uses a lot of energy a lot a lot a lot

3687

02:24:58,309 --> 02:24:55,920

and and we're trying to take particles

3688

02:25:00,469 --> 02:24:58,319

run them through miles and miles of

3689

02:25:02,870 --> 02:25:00,479

distance and then hit each other with

3690

02:25:04,630 --> 02:25:02,880

them and the kind of precision that you

3691

02:25:06,309 --> 02:25:04,640

need for that it's it's like

3692

02:25:09,190 --> 02:25:06,319

not playing dots it'd be like trying to

3693

02:25:11,110 --> 02:25:09,200

throw a dart and keep it on track or

3694

02:25:13,429 --> 02:25:11,120

circle the planet because it has just

3695

02:25:15,270 --> 02:25:13,439

enough speed and so it hit your hand

3696

02:25:16,950 --> 02:25:15,280

after you threw it and just go like that

3697

02:25:19,349 --> 02:25:16,960

have it come back and hit that location

3698

02:25:20,550 --> 02:25:19,359

after the whole planet and without

3699

02:25:22,790 --> 02:25:20,560

having any way to guide it's not a

3700

02:25:24,710 --> 02:25:22,800

missile or rocket it was your throw that

3701

02:25:25,910 --> 02:25:24,720

was that accurate that's what we have to

3702

02:25:26,950 --> 02:25:25,920

do with that thing

3703

02:25:29,190 --> 02:25:26,960

it is

3704

02:25:31,510 --> 02:25:29,200

hugely expensive for a reason everybody

3705

02:25:33,349 --> 02:25:31,520

gets some results done nonetheless as

3706

02:25:35,270 --> 02:25:33,359

huge as the energies are involved in

3707

02:25:36,790 --> 02:25:35,280

that almost all of it doesn't actually

3708

02:25:40,070 --> 02:25:36,800

end up in the collision

3709

02:25:41,910 --> 02:25:40,080

because we miss so much we throw tons of

3710

02:25:43,990 --> 02:25:41,920

particles down range and the other

3711

02:25:46,550 --> 02:25:44,000

direction and and we try to have them

3712

02:25:48,550 --> 02:25:46,560

hit a target and most of them miss you

3713

02:25:49,990 --> 02:25:48,560

know and what we get out of that though

3714

02:25:51,590 --> 02:25:50,000

is is still

3715

02:25:52,950 --> 02:25:51,600

you know the energy is involved people

3716

02:25:54,550 --> 02:25:52,960

say well can you actually see what it's

3717

02:25:56,469 --> 02:25:54,560

like when you when you move something up

3718

02:25:58,309 --> 02:25:56,479

this allegedly really close to light

3719

02:25:59,990 --> 02:25:58,319

speed it's like oh yeah yeah we've been

3720

02:26:01,750 --> 02:26:00,000

doing that for a long time every every

3721

02:26:04,110 --> 02:26:01,760

lab that you uh have doing particle

3722

02:26:07,429 --> 02:26:04,120

plyos they run these things at like

3723

02:26:09,190 --> 02:26:07,439

0.99999 c or much higher and you can

3724

02:26:11,030 --> 02:26:09,200

absolutely see the relativistic facts we

3725

02:26:12,950 --> 02:26:11,040

have particles that only live

3726

02:26:14,950 --> 02:26:12,960

for fractions of time so small they

3727

02:26:16,790 --> 02:26:14,960

wouldn't be able to move at light speed

3728

02:26:18,710 --> 02:26:16,800

to the edge of this chamber

3729

02:26:20,230 --> 02:26:18,720

to then they would die before they reach

3730

02:26:22,790 --> 02:26:20,240

that even though they're moving at light

3731

02:26:24,550 --> 02:26:22,800

speed or very close to it but because

3732

02:26:26,790 --> 02:26:24,560

they're so relativistically shifted by

3733

02:26:29,750 --> 02:26:26,800

their own raw energy often millions of

3734

02:26:31,990 --> 02:26:29,760

times more than their mass energy they

3735

02:26:32,870 --> 02:26:32,000

live millions of times longer than they

3736

02:26:35,830 --> 02:26:32,880

should

3737

02:26:37,510 --> 02:26:35,840

uh in our subjective view and manage to

3738

02:26:39,190 --> 02:26:37,520

reach the edge of that detector same

3739

02:26:41,110 --> 02:26:39,200

thing for muons near atmosphere when

3740

02:26:43,510 --> 02:26:41,120

they're made that gets the ground only

3741

02:26:46,309 --> 02:26:43,520

because they are moving so volatilistic

3742

02:26:48,790 --> 02:26:46,319

that they live longer than they should

3743

02:26:51,110 --> 02:26:48,800

now is there a danger we were talking

3744

02:26:53,030 --> 02:26:51,120

about this earlier um and i think it's a

3745

02:26:55,910 --> 02:26:53,040

very important question

3746

02:26:57,750 --> 02:26:55,920

um we we know how many particles are in

3747

02:27:00,230 --> 02:26:57,760

the universe we've we've run the number

3748

02:27:04,070 --> 02:27:00,240

i know it's a crazy thought that that we

3749

02:27:06,630 --> 02:27:04,080

actually have a pretty firm grasp on

3750

02:27:10,550 --> 02:27:06,640

on the mass of the universe but if we

3751
02:27:11,910 --> 02:27:10,560
destroy a particle with the large hadron

3752
02:27:14,389 --> 02:27:11,920
collider

3753
02:27:16,790 --> 02:27:14,399
and and take it apart are we upsetting

3754
02:27:20,230 --> 02:27:16,800
the balance of the universe and are we

3755
02:27:23,030 --> 02:27:20,240
in danger of if we disintegrate in adam

3756
02:27:25,670 --> 02:27:23,040
um is it possible to

3757
02:27:29,030 --> 02:27:25,680
to bump start a big bang right there on

3758
02:27:30,630 --> 02:27:29,040
the border of france and switzerland

3759
02:27:32,389 --> 02:27:30,640
that depends on what we mean by destroy

3760
02:27:34,870 --> 02:27:32,399
or disintegrate you know if i born a

3761
02:27:37,270 --> 02:27:34,880
piece of paper i've destroyed it if i

3762
02:27:39,110 --> 02:27:37,280
fuse an atom uh you know two hydrogen

3763
02:27:41,110 --> 02:27:39,120

particles together make a deuterium

3764

02:27:42,950 --> 02:27:41,120

isotope uh some of that energy gets

3765

02:27:44,710 --> 02:27:42,960

released uh and you know now all of a

3766

02:27:47,349 --> 02:27:44,720

sudden i've got uh proton and neutron

3767

02:27:49,110 --> 02:27:47,359

said two protons uh did those quarks get

3768

02:27:51,270 --> 02:27:49,120

destroyed did those

3769

02:27:53,190 --> 02:27:51,280

trillions upon trillions of c corks in

3770

02:27:55,270 --> 02:27:53,200

which the real ones drift around and so

3771

02:27:57,510 --> 02:27:55,280

sorry not the sequel surveillance quarks

3772

02:27:58,950 --> 02:27:57,520

did those get destroyed and doesn't

3773

02:28:00,870 --> 02:27:58,960

matter and the question is how long does

3774

02:28:02,389 --> 02:28:00,880

it even last most particles as best you

3775

02:28:04,870 --> 02:28:02,399

can tell all the vulture ones so to

3776
02:28:07,510 --> 02:28:04,880
speak they pop in and out of resistance

3777
02:28:08,950 --> 02:28:07,520
constantly and this big foam that

3778
02:28:11,510 --> 02:28:08,960
that we talked about all the time and

3779
02:28:12,710 --> 02:28:11,520
also like trying to find the bosc of the

3780
02:28:14,309 --> 02:28:12,720
higgs boson

3781
02:28:16,790 --> 02:28:14,319
these things pop in and out of existence

3782
02:28:19,030 --> 02:28:16,800
constantly and they're being destroyed

3783
02:28:20,870 --> 02:28:19,040
as though they never existed because

3784
02:28:24,070 --> 02:28:20,880
from a certain perspective they never

3785
02:28:24,870 --> 02:28:24,080
existed uh in a really weird quantum e

3786
02:28:26,550 --> 02:28:24,880
sense

3787
02:28:28,550 --> 02:28:26,560
and uh

3788
02:28:30,070 --> 02:28:28,560

if they didn't exist if one of these

3789

02:28:32,630 --> 02:28:30,080

things was if i were to reach back in

3790

02:28:34,309 --> 02:28:32,640

time and remove just one atom from

3791

02:28:36,950 --> 02:28:34,319

existence all of its energy all its

3792

02:28:38,230 --> 02:28:36,960

potential all of its future realities

3793

02:28:39,750 --> 02:28:38,240

those are gone

3794

02:28:40,790 --> 02:28:39,760

and the universe has changed because of

3795

02:28:42,469 --> 02:28:40,800

that

3796

02:28:44,309 --> 02:28:42,479

but i'll be in a very tiny way and of

3797

02:28:45,990 --> 02:28:44,319

course the folks who live a million

3798

02:28:48,550 --> 02:28:46,000

light years away might not be any way

3799

02:28:50,550 --> 02:28:48,560

affected by that uh in a very sincere

3800

02:28:52,790 --> 02:28:50,560

and genuine way until the light or

3801
02:28:54,389 --> 02:28:52,800
causality reached them because the speed

3802
02:28:56,230 --> 02:28:54,399
of light really isn't the speed of light

3803
02:28:59,030 --> 02:28:56,240
it's the speed of causality of cause and

3804
02:29:03,190 --> 02:29:01,670
locally it could be a very big deal

3805
02:29:05,110 --> 02:29:03,200
yeah and of course that's going to

3806
02:29:06,950 --> 02:29:05,120
spread and of course the big thing on

3807
02:29:09,590 --> 02:29:06,960
all this the big takeaway i'd say is

3808
02:29:10,790 --> 02:29:09,600
that we to this day almost a century

3809
02:29:12,630 --> 02:29:10,800
after we started playing around with

3810
02:29:15,030 --> 02:29:12,640
quantum still don't actually have a

3811
02:29:17,670 --> 02:29:15,040
theory of how we unify quantum with

3812
02:29:19,429 --> 02:29:17,680
general relativity and so we don't have

3813
02:29:21,270 --> 02:29:19,439

quantum gravity and

3814

02:29:23,429 --> 02:29:21,280

everything involving black holes

3815

02:29:25,349 --> 02:29:23,439

involving time travel these things are

3816

02:29:27,670 --> 02:29:25,359

all very dependent on that theory of

3817

02:29:29,190 --> 02:29:27,680

quantum gravity and

3818

02:29:31,030 --> 02:29:29,200

the best way to resource that is that

3819

02:29:33,030 --> 02:29:31,040

that gigantic hadron collider and a few

3820

02:29:34,070 --> 02:29:33,040

of its potential kindred will eventually

3821

02:29:35,830 --> 02:29:34,080

build so

3822

02:29:37,670 --> 02:29:35,840

that's the let's say that's the risk

3823

02:29:39,429 --> 02:29:37,680

involved it is very minimal i i would

3824

02:29:40,790 --> 02:29:39,439

honestly say i do not

3825

02:29:43,190 --> 02:29:40,800

for a moment believe it's likely to

3826
02:29:45,349 --> 02:29:43,200
actually cause any problems for us

3827
02:29:47,190 --> 02:29:45,359
uh but you know you can never really say

3828
02:29:47,990 --> 02:29:47,200
no for sure we are trying to figure out

3829
02:29:53,750 --> 02:29:48,000
what

3830
02:29:54,870 --> 02:29:53,760
not really honest at the same time

3831
02:29:56,790 --> 02:29:54,880
there's very little reason to get a

3832
02:29:58,070 --> 02:29:56,800
problem if we want to move forward and

3833
02:29:59,590 --> 02:29:58,080
discover these things though if we want

3834
02:30:01,670 --> 02:29:59,600
to know how this stuff works and see

3835
02:30:03,670 --> 02:30:01,680
about these new possible different

3836
02:30:04,389 --> 02:30:03,680
reality breaking rules that might be in

3837
02:30:06,150 --> 02:30:04,399
play

3838
02:30:08,630 --> 02:30:06,160

we are going to have to take some risks

3839

02:30:10,389 --> 02:30:08,640

this is life this is this is what we do

3840

02:30:13,110 --> 02:30:10,399

like humanity do not get where we are

3841

02:30:15,349 --> 02:30:13,120

now by playing it safe cautious right

3842

02:30:16,950 --> 02:30:15,359

cautious not reckless but you often

3843

02:30:19,910 --> 02:30:16,960

happen reckless be sure

3844

02:30:21,030 --> 02:30:19,920

cautious not reckless but we do not play

3845

02:30:23,830 --> 02:30:21,040

it safe

3846

02:30:24,870 --> 02:30:23,840

do you believe uh 30 seconds quick

3847

02:30:27,510 --> 02:30:24,880

question

3848

02:30:29,349 --> 02:30:27,520

that you have 10 000 scientists involved

3849

02:30:30,550 --> 02:30:29,359

with cern you've got 100 countries

3850

02:30:32,790 --> 02:30:30,560

you've got

3851
02:30:35,670 --> 02:30:32,800
hundreds of universities right it's a

3852
02:30:37,750 --> 02:30:35,680
crazy amount of uh intellectual brain

3853
02:30:39,670 --> 02:30:37,760
power involved there but do you believe

3854
02:30:42,150 --> 02:30:39,680
that there could be

3855
02:30:44,790 --> 02:30:42,160
a group of very rich

3856
02:30:47,270 --> 02:30:44,800
ceos and corporation owners and elites

3857
02:30:51,030 --> 02:30:47,280
going okay we got to figure out this

3858
02:30:53,830 --> 02:30:51,040
time travel stuff and and when we do

3859
02:30:56,230 --> 02:30:53,840
we keep it to ourselves

3860
02:30:59,030 --> 02:30:56,240
is is that a possibility

3861
02:31:00,790 --> 02:30:59,040
yes i mean i mean

3862
02:31:02,469 --> 02:31:00,800
being rich does not necessarily mean one

3863
02:31:04,950 --> 02:31:02,479

is wise in all things and i i've heard

3864

02:31:06,710 --> 02:31:04,960

of many a very wealthy person building a

3865

02:31:07,590 --> 02:31:06,720

a doomsday bunker that seems like a

3866

02:31:09,270 --> 02:31:07,600

really good idea because they're

3867

02:31:10,950 --> 02:31:09,280

expecting the water to come to an end

3868

02:31:13,110 --> 02:31:10,960

and yet ignoring things that would

3869

02:31:14,950 --> 02:31:13,120

basically make that bunker useless for

3870

02:31:17,429 --> 02:31:14,960

them even though they have spent so much

3871

02:31:18,790 --> 02:31:17,439

money on it um there are it is not

3872

02:31:21,030 --> 02:31:18,800

unusual for people with a lot of

3873

02:31:22,870 --> 02:31:21,040

resources and power to do incredibly

3874

02:31:24,469 --> 02:31:22,880

stupid things and i can think of a lot

3875

02:31:26,710 --> 02:31:24,479

of stupid things than getting your ads

3876

02:31:28,950 --> 02:31:26,720

on a time travel device and keeping it

3877

02:31:30,710 --> 02:31:28,960

for yourself so you know that's

3878

02:31:32,389 --> 02:31:30,720

basically what doctor who does this is

3879

02:31:33,990 --> 02:31:32,399

folks they have this and they don't

3880

02:31:35,349 --> 02:31:34,000

share that technology around

3881

02:31:37,349 --> 02:31:35,359

theoretically for the good of everybody

3882

02:31:39,670 --> 02:31:37,359

else but in point of fact they've got it

3883

02:31:41,110 --> 02:31:39,680

right doctor who or whoever when i have

3884

02:31:43,190 --> 02:31:41,120

this time machine or you know jeff

3885

02:31:44,790 --> 02:31:43,200

bezos's war

3886

02:31:45,990 --> 02:31:44,800

would i share that technology if i had

3887

02:31:47,910 --> 02:31:46,000

it

3888

02:31:49,750 --> 02:31:47,920

no i don't think i would if i had a time

3889

02:31:51,670 --> 02:31:49,760

travel machine i probably would go back

3890

02:31:53,910 --> 02:31:51,680

win some lotteries and keep that thing

3891

02:31:56,950 --> 02:31:53,920

to myself yeah you don't you don't want

3892

02:31:58,870 --> 02:31:56,960

russia uh with uh

3893

02:32:00,309 --> 02:31:58,880

i can think of bad things i might do

3894

02:32:02,790 --> 02:32:00,319

with that and i i think of myself as a

3895

02:32:04,389 --> 02:32:02,800

reasonably ethical person

3896

02:32:06,150 --> 02:32:04,399

let's talk about that when we come back

3897

02:32:08,150 --> 02:32:06,160

we're gonna go to overtime

3898

02:32:11,670 --> 02:32:08,160

and when i come back we're gonna talk

3899

02:32:14,230 --> 02:32:11,680

about the science of back to the future

3900

02:32:15,190 --> 02:32:14,240

one two and three

3901
02:32:18,309 --> 02:32:15,200
and

3902
02:32:20,309 --> 02:32:18,319
is it possible one but what would you do

3903
02:32:21,990 --> 02:32:20,319
if you did have that technology we'll do

3904
02:32:23,670 --> 02:32:22,000
all of that when we come back our guest

3905
02:32:26,970 --> 02:32:23,680
tonight isaac arthur

3906
02:32:35,190 --> 02:32:26,980
stay with us this is fade to black

3907
02:32:39,840 --> 02:32:38,550
[Music]

3908
02:32:47,830 --> 02:32:39,850
[Applause]

3909
02:32:51,510 --> 02:32:49,990
you're listening to jimmy church and

3910
02:32:56,469 --> 02:32:51,520
fade to black

3911
02:33:01,670 --> 02:32:58,870
hey what up y'all biblical fox here and

3912
02:33:05,990 --> 02:33:01,680
you are listening to my boy jimmy church

3913
02:33:12,870 --> 02:33:08,550

despite popular opinion

3914

02:33:12,880 --> 02:33:16,630

but listening to jimmy churchill

3915

02:33:21,830 --> 02:33:18,710

hello fader knots jimmy church here

3916

02:33:24,150 --> 02:33:21,840

you've seen me with my thunderstorm now

3917

02:33:26,389 --> 02:33:24,160

you can purify the air in your home and

3918

02:33:28,710 --> 02:33:26,399

get healthy clean fresh smelling air and

3919

02:33:30,630 --> 02:33:28,720

eliminate odors just like i do right

3920

02:33:33,190 --> 02:33:30,640

here in the bunker the eden pier

3921

02:33:35,670 --> 02:33:33,200

thunderstorm uses oxy technology that

3922

02:33:37,990 --> 02:33:35,680

naturally sends out o3 molecules into

3923

02:33:40,309 --> 02:33:38,000

the air which seek out odors and air

3924

02:33:42,870 --> 02:33:40,319

pollutants in your home and destroys

3925

02:33:45,349 --> 02:33:42,880

them it's called a thunderstorm because

3926

02:33:47,830 --> 02:33:45,359

it purifies the air just like after a

3927

02:33:49,590 --> 02:33:47,840

thunderstorm and right now you can save

3928

02:33:52,469 --> 02:33:49,600

two hundred dollars on an eden pier

3929

02:33:54,710 --> 02:33:52,479

thunderstorm three pack for whole home

3930

02:33:56,710 --> 02:33:54,720

protection with this special offer

3931

02:33:57,990 --> 02:33:56,720

you're getting three units for under two

3932

02:34:00,429 --> 02:33:58,000

hundred dollars

3933

02:34:04,070 --> 02:34:00,439

seriously go to

3934

02:34:06,710 --> 02:34:04,080

edenpuredeals.com and use fader three

3935

02:34:09,349 --> 02:34:06,720

shipping is free and it's easy just

3936

02:34:10,230 --> 02:34:09,359

scroll down you'll see my name right

3937

02:34:13,349 --> 02:34:10,240

there

3938

02:34:19,590 --> 02:34:13,359

jimmy church click on it and get your

3939

02:34:23,910 --> 02:34:21,830

this is billy carson founder and ceo of

3940

02:34:26,150 --> 02:34:23,920

forbidden knowledge dot tv forbidden

3941

02:34:27,910 --> 02:34:26,160

knowledge dot tv is the fastest growing

3942

02:34:29,750 --> 02:34:27,920

and one of the most watched networks in

3943

02:34:31,510 --> 02:34:29,760

the world and i would like to personally

3944

02:34:34,230 --> 02:34:31,520

invite you to check out our expanding

3945

02:34:36,469 --> 02:34:34,240

library of tv film lectures and special

3946

02:34:39,030 --> 02:34:36,479

presentations forbidden knowledge dot tv

3947

02:34:41,750 --> 02:34:39,040

has over 6 000 videos covering lost

3948

02:34:43,590 --> 02:34:41,760

history health ufos spirituality and our

3949

02:34:45,910 --> 02:34:43,600

future we are committed to our community

3950

02:34:48,309 --> 02:34:45,920

and with my personal invitation you can

3951

02:34:50,950 --> 02:34:48,319

right now get your own free 30-day

3952

02:34:53,270 --> 02:34:50,960

membership at forbidden knowledge dot tv

3953

02:34:56,540 --> 02:34:53,280

your own library of information starts

3954

02:34:58,070 --> 02:34:56,550

today at forbidden knowledge dot tv

3955

02:35:00,550 --> 02:34:58,080

[Music]

3956

02:35:03,910 --> 02:35:00,560

your 1 million gigawatt paranormal

3957

02:35:05,750 --> 02:35:03,920

powerhouse kumx db

3958

02:35:07,429 --> 02:35:05,760

vx

3959

02:35:10,070 --> 02:35:07,439

are you ready to read about true

3960

02:35:12,870 --> 02:35:10,080

paranormal events unex media publishes

3961

02:35:15,270 --> 02:35:12,880

non-fiction books about ufos ghosts and

3962

02:35:18,550 --> 02:35:15,280

haunted places time anomalies cryptid

3963

02:35:20,710 --> 02:35:18,560

creatures and more just like kunx db

3964

02:35:23,710 --> 02:35:20,720

radio it's all about unexplained

3965

02:35:25,670 --> 02:35:23,720

phenomena visit

3966

02:35:27,910 --> 02:35:25,680

www.annexmedia.com to see our list of

3967

02:35:30,469 --> 02:35:27,920

great book titles by debbie zigglemeyer

3968

02:35:33,030 --> 02:35:30,479

gene walker devin listrom wayne lawrence

3969

02:35:37,030 --> 02:35:33,040

bill spicer and yours truly margie k

3970

02:35:41,190 --> 02:35:39,349

introducing the game changer blend from

3971

02:35:43,750 --> 02:35:41,200

river moon coffee that delivers a

3972

02:35:46,790 --> 02:35:43,760

customized blend made specifically for

3973

02:35:49,750 --> 02:35:46,800

the fader knots if the game is rigged

3974

02:35:50,950 --> 02:35:49,760

change the game it's a boulder cup with

3975

02:35:53,190 --> 02:35:50,960

some bite

3976

02:35:55,429 --> 02:35:53,200

game changer is the coffee of choice for

3977

02:35:58,550 --> 02:35:55,439

those that prefer an organic dark roast

3978

02:36:01,270 --> 02:35:58,560

that is slightly lighter and milder but

3979

02:36:03,510 --> 02:36:01,280

it's still dark with wild notes of

3980

02:36:06,150 --> 02:36:03,520

pecans and chocolate with a rich

3981

02:36:08,230 --> 02:36:06,160

balanced full-bodied cup that is roasted

3982

02:36:11,270 --> 02:36:08,240

to perfection for a great coffee to

3983

02:36:14,309 --> 02:36:11,280

start your day as an after dinner coffee

3984

02:36:16,790 --> 02:36:14,319

or anywhere in between artisan small

3985

02:36:19,349 --> 02:36:16,800

batch roasted to perfection usda

3986

02:36:21,750 --> 02:36:19,359

certified organic all river moon coffee

3987

02:36:24,630 --> 02:36:21,760

is freshly roasted and packaged in the

3988

02:36:26,710 --> 02:36:24,640

usa just go to rivermooncoffee.com or

3989

02:36:30,630 --> 02:36:26,720

click on the banners over on our site

3990

02:36:32,710 --> 02:36:30,640

and use the promo code f2b blend for 15

3991

02:36:35,990 --> 02:36:32,720

off of your order today

3992

02:36:41,190 --> 02:36:38,630

you intrigued by paranormal talk radio

3993

02:36:43,510 --> 02:36:41,200

you love the new paranormal radio app

3994

02:36:45,270 --> 02:36:43,520

from talk stream live

3995

02:36:48,070 --> 02:36:45,280

you'll find a great selection of talk

3996

02:36:50,710 --> 02:36:48,080

shows covering ufos ghosts strange

3997

02:36:53,030 --> 02:36:50,720

phenomena and much more download the

3998

02:36:55,030 --> 02:36:53,040

paranormal radio app now and start

3999

02:36:57,270 --> 02:36:55,040

listening to the very best in paranormal

4000

02:36:59,030 --> 02:36:57,280

talk entertainment including the network

4001
02:37:02,230 --> 02:36:59,040
you're listening to right now the

4002
02:37:10,740 --> 02:37:02,240
paranormal radio app free in google play

4003
02:37:15,990 --> 02:37:12,950
[Music]

4004
02:37:19,750 --> 02:37:16,000
it's not a lifestyle we chose we were

4005
02:37:23,580 --> 02:37:19,760
born this way this is kjcr

4006
02:37:38,230 --> 02:37:35,670
[Music]

4007
02:37:40,550 --> 02:37:38,240
all right welcome back fade to black i

4008
02:37:42,790 --> 02:37:40,560
am your host jimmy church

4009
02:37:46,950 --> 02:37:42,800
heading into overtime with isaac arthur

4010
02:37:49,510 --> 02:37:46,960
tonight and isaac and i we knew uh

4011
02:37:52,230 --> 02:37:49,520
there's a time trap we've just scratched

4012
02:37:54,630 --> 02:37:52,240
the surface of it tonight and i we

4013
02:37:57,750 --> 02:37:54,640

didn't jump into the butterfly effect uh

4014

02:38:00,630 --> 02:37:57,760

we didn't get into other aspects of this

4015

02:38:03,349 --> 02:38:00,640

didn't talk about john teeter

4016

02:38:06,309 --> 02:38:03,359

and his gravity clock which i've always

4017

02:38:08,469 --> 02:38:06,319

found very very compelling um and the

4018

02:38:10,870 --> 02:38:08,479

fact that john teeter disappeared and

4019

02:38:12,309 --> 02:38:10,880

never came back and was he really a real

4020

02:38:13,910 --> 02:38:12,319

time traveler

4021

02:38:15,670 --> 02:38:13,920

and we can save all of that for another

4022

02:38:18,230 --> 02:38:15,680

show but i do want to

4023

02:38:21,349 --> 02:38:18,240

uh uh talk have a little bit of fun and

4024

02:38:24,389 --> 02:38:21,359

loosen it up a little bit um and and and

4025

02:38:26,150 --> 02:38:24,399

talk about back to the future um

4026

02:38:28,790 --> 02:38:26,160

that's the future for you

4027

02:38:31,190 --> 02:38:28,800

uh it was great i saw it uh before back

4028

02:38:32,790 --> 02:38:31,200

to the future one i i i got the

4029

02:38:34,550 --> 02:38:32,800

videotape

4030

02:38:35,750 --> 02:38:34,560

it was good

4031

02:38:38,710 --> 02:38:35,760

it was great

4032

02:38:39,830 --> 02:38:38,720

and and here but but here's here's the

4033

02:38:41,429 --> 02:38:39,840

thing

4034

02:38:44,469 --> 02:38:41,439

um

4035

02:38:45,750 --> 02:38:44,479

it seems that

4036

02:38:48,790 --> 02:38:45,760

it's funny

4037

02:38:51,510 --> 02:38:48,800

right it's it's scientific at points uh

4038

02:38:52,950 --> 02:38:51,520

too as well but it certainly addresses

4039

02:38:54,230 --> 02:38:52,960

the paradox

4040

02:38:57,110 --> 02:38:54,240

in that

4041

02:39:00,070 --> 02:38:57,120

the movies uh and by the way back to the

4042

02:39:03,270 --> 02:39:00,080

future threes it it might be better than

4043

02:39:05,590 --> 02:39:03,280

one very rare hollywood phenomena that

4044

02:39:08,790 --> 02:39:05,600

uh a three-part

4045

02:39:11,190 --> 02:39:08,800

three-part series of movies uh exceeded

4046

02:39:13,110 --> 02:39:11,200

the previous movie yeah very few movie

4047

02:39:16,469 --> 02:39:13,120

trilogies do good star wars pulled it

4048

02:39:18,309 --> 02:39:16,479

off for the forced trilogy at least so

4049

02:39:20,230 --> 02:39:18,319

you're right about that

4050

02:39:22,950 --> 02:39:20,240

i i think you're right uh it built on

4051

02:39:26,150 --> 02:39:22,960

that very rare um that back to the

4052

02:39:29,030 --> 02:39:26,160

future was was so well done but

4053

02:39:31,030 --> 02:39:29,040

it just turned out to be

4054

02:39:33,510 --> 02:39:31,040

you have to go back and fix what you

4055

02:39:35,110 --> 02:39:33,520

thought you fixed right and that's what

4056

02:39:36,710 --> 02:39:35,120

the series is about

4057

02:39:41,990 --> 02:39:36,720

you

4058

02:39:44,710 --> 02:39:42,000

anything is going to be not only a

4059

02:39:47,590 --> 02:39:44,720

series of paradoxes but you're never

4060

02:39:50,830 --> 02:39:47,600

going to improve anything you're going

4061

02:39:52,630 --> 02:39:50,840

to come back home and go oh

4062

02:39:55,110 --> 02:39:52,640

crap right

4063

02:39:56,870 --> 02:39:55,120

and then have to turn around and try to

4064

02:39:58,469 --> 02:39:56,880

fix and then you're not going to fix

4065

02:40:00,550 --> 02:39:58,479

that either the key thing you can never

4066

02:40:01,910 --> 02:40:00,560

go back home again with time travel you

4067

02:40:04,230 --> 02:40:01,920

could go to an alternate universe that

4068

02:40:05,670 --> 02:40:04,240

was identical in every way for you but

4069

02:40:07,990 --> 02:40:05,680

if your goal was to go back in time and

4070

02:40:09,590 --> 02:40:08,000

fix a problem you didn't actually fix it

4071

02:40:10,870 --> 02:40:09,600

you just ended up in a universe that it

4072

02:40:12,710 --> 02:40:10,880

was fixed in

4073

02:40:15,030 --> 02:40:12,720

you know the one that you left is still

4074

02:40:17,750 --> 02:40:15,040

there if you go back in time and kill

4075

02:40:19,510 --> 02:40:17,760

john connor in an alternate timeline if

4076

02:40:21,830 --> 02:40:19,520

there are alternate timelines that's the

4077

02:40:22,950 --> 02:40:21,840

one that's going to persist and the one

4078

02:40:24,710 --> 02:40:22,960

that you were in

4079

02:40:26,389 --> 02:40:24,720

it just has you in you within going back

4080

02:40:28,309 --> 02:40:26,399

in time to kill the guy he still didn't

4081

02:40:30,950 --> 02:40:28,319

die that altered timelines where that

4082

02:40:33,990 --> 02:40:31,910

at least

4083

02:40:37,030 --> 02:40:34,000

is that the only way to get rid of uh

4084

02:40:38,630 --> 02:40:37,040

the paradox paradoxes well no no there

4085

02:40:40,630 --> 02:40:38,640

are there's a lot of ways that we can

4086

02:40:42,230 --> 02:40:40,640

approach it on that but the assumption

4087

02:40:44,550 --> 02:40:42,240

is usually if there's a paradox a

4088

02:40:46,469 --> 02:40:44,560

paradox can't exist i don't hold it

4089

02:40:47,670 --> 02:40:46,479

myself i i don't think

4090

02:40:49,670 --> 02:40:47,680

i feel like the kind of the natural

4091

02:40:51,349 --> 02:40:49,680

reality is going to require paradoxes be

4092

02:40:53,590 --> 02:40:51,359

possible occasionally which is

4093

02:40:55,030 --> 02:40:53,600

paradoxical itself but we usually hold

4094

02:40:57,429 --> 02:40:55,040

that a paradox is something that's not

4095

02:40:58,790 --> 02:40:57,439

going to happen so if there's a paradox

4096

02:41:00,870 --> 02:40:58,800

it didn't happen

4097

02:41:02,790 --> 02:41:00,880

one of the examples we have is the nokia

4098

02:41:04,309 --> 02:41:02,800

self self-consistency principle which

4099

02:41:06,630 --> 02:41:04,319

kind of holds the idea that if you went

4100

02:41:08,710 --> 02:41:06,640

back in time and changed something

4101
02:41:09,750 --> 02:41:08,720
you can't actually have the paradox so

4102
02:41:11,670 --> 02:41:09,760
something's going to happen to make you

4103
02:41:13,349 --> 02:41:11,680
go back and do that and it could be

4104
02:41:14,550 --> 02:41:13,359
something as strange as only the

4105
02:41:16,150 --> 02:41:14,560
realities

4106
02:41:17,750 --> 02:41:16,160
persist where you went and did that

4107
02:41:19,269 --> 02:41:17,760
right you have all these branching

4108
02:41:21,750 --> 02:41:19,279
timelines off of when you went back and

4109
02:41:24,550 --> 02:41:21,760
changed that time and only the ones that

4110
02:41:26,469 --> 02:41:24,560
actually lead back in some way to going

4111
02:41:27,750 --> 02:41:26,479
back in time to do that action

4112
02:41:29,750 --> 02:41:27,760
can actually persist the others just

4113
02:41:30,870 --> 02:41:29,760

kind of pop out as quantum foam they

4114

02:41:33,349 --> 02:41:30,880

they're hazely they are there and

4115

02:41:35,590 --> 02:41:33,359

they're gone right so i go back in time

4116

02:41:37,750 --> 02:41:35,600

to save my grandfather from dying

4117

02:41:39,349 --> 02:41:37,760

and i i have one where i he stood out

4118

02:41:41,190 --> 02:41:39,359

anyway from cancer years back and i went

4119

02:41:43,269 --> 02:41:41,200

back then to save him or i have one

4120

02:41:46,230 --> 02:41:43,279

where i did save him

4121

02:41:48,550 --> 02:41:46,240

but i went crazy and this and thought he

4122

02:41:49,910 --> 02:41:48,560

died even though he was still alive and

4123

02:41:52,070 --> 02:41:49,920

that's what made me travel back in time

4124

02:41:54,070 --> 02:41:52,080

to save him you that would be a reality

4125

02:41:55,510 --> 02:41:54,080

that would still be allowed to exist

4126
02:41:57,990 --> 02:41:55,520
because it ends will be coming back the

4127
02:42:01,190 --> 02:41:58,000
same point but how do you introduce the

4128
02:42:02,550 --> 02:42:01,200
loop you have to start it somehow

4129
02:42:04,150 --> 02:42:02,560
there's other ones you might have like

4130
02:42:05,590 --> 02:42:04,160
inertia in some case like you go in a

4131
02:42:07,830 --> 02:42:05,600
loop and much like a tire spinning

4132
02:42:09,590 --> 02:42:07,840
around eventually the tire stops so if

4133
02:42:11,990 --> 02:42:09,600
it's wobbly it could get off hill engine

4134
02:42:13,110 --> 02:42:12,000
break off right these there are so many

4135
02:42:14,309 --> 02:42:13,120
different ways that we can look at them

4136
02:42:17,990 --> 02:42:14,319
they're all

4137
02:42:20,230 --> 02:42:18,000
behind you know some work out well as

4138
02:42:22,630 --> 02:42:20,240

mathematical theories but the reality is

4139

02:42:24,150 --> 02:42:22,640

we don't have any idea how this really

4140

02:42:26,309 --> 02:42:24,160

would work we can just look at an

4141

02:42:28,790 --> 02:42:26,319

example of how it would work using

4142

02:42:32,870 --> 02:42:28,800

certain mechanics to say well if x were

4143

02:42:34,550 --> 02:42:32,880

the case then y you know z etc so we had

4144

02:42:37,190 --> 02:42:34,560

the branching timelines one with the

4145

02:42:38,630 --> 02:42:37,200

closed loops one and we shouldn't assume

4146

02:42:40,790 --> 02:42:38,640

like we say well i go back and it

4147

02:42:42,950 --> 02:42:40,800

becomes one single loop like a piece of

4148

02:42:44,550 --> 02:42:42,960

yarn that's just been loosened up there

4149

02:42:46,710 --> 02:42:44,560

and put in a little loop think of it

4150

02:42:48,710 --> 02:42:46,720

instead possibly as going to that same

4151
02:42:50,630 --> 02:42:48,720
intersecting point where that yarn loop

4152
02:42:52,790 --> 02:42:50,640
intersects with itself but then it could

4153
02:42:54,230 --> 02:42:52,800
do multiple loops in the same place all

4154
02:42:55,910 --> 02:42:54,240
looping back on that same pulse just

4155
02:42:58,630 --> 02:42:55,920
like you were the piece of yarn it's

4156
02:43:00,550 --> 02:42:58,640
still one timeline for you it just

4157
02:43:02,710 --> 02:43:00,560
happens to keep running back around the

4158
02:43:05,590 --> 02:43:02,720
year 2100 for some reason you event time

4159
02:43:08,870 --> 02:43:05,600
machine 2100 jump back in time to 2080

4160
02:43:10,469 --> 02:43:08,880
and you keep circling until you get an

4161
02:43:12,469 --> 02:43:10,479
actual reality that causes you to do

4162
02:43:14,230 --> 02:43:12,479
that first event again for real so it

4163
02:43:16,389 --> 02:43:14,240

isn't necessarily one timeline one loop

4164

02:43:18,230 --> 02:43:16,399

it could be several next to each other

4165

02:43:20,150 --> 02:43:18,240

and that's another possible model of

4166

02:43:21,349 --> 02:43:20,160

time travel on top of the one of course

4167

02:43:23,510 --> 02:43:21,359

we just went

4168

02:43:26,230 --> 02:43:23,520

and went off to the side right and would

4169

02:43:27,110 --> 02:43:26,240

you experience it uh

4170

02:43:28,469 --> 02:43:27,120

different

4171

02:43:30,630 --> 02:43:28,479

in other words

4172

02:43:34,550 --> 02:43:30,640

would you know damn man

4173

02:43:36,550 --> 02:43:34,560

80 times now and i've got to step off of

4174

02:43:38,230 --> 02:43:36,560

of this wheel i've i've got to figure

4175

02:43:39,830 --> 02:43:38,240

out a way well i mean would you even

4176
02:43:41,429 --> 02:43:39,840
wear the wins you might realize there's

4177
02:43:43,510 --> 02:43:41,439
an ever you know the little bits of

4178
02:43:45,510 --> 02:43:43,520
shift in paradox are moving you

4179
02:43:47,510 --> 02:43:45,520
converging you towards eventually

4180
02:43:50,230 --> 02:43:47,520
hitting a reality that caused you to

4181
02:43:51,750 --> 02:43:50,240
start that first event again or uh to

4182
02:43:54,389 --> 02:43:51,760
continue the timeline the groundhog day

4183
02:43:56,070 --> 02:43:54,399
of venezuela to get out of that

4184
02:43:57,590 --> 02:43:56,080
um and then again you gotta say what's

4185
02:44:00,070 --> 02:43:57,600
actually going on the outside universe

4186
02:44:01,590 --> 02:44:00,080
so this is happening right uh we don't

4187
02:44:03,269 --> 02:44:01,600
know that time isn't continuing to flow

4188
02:44:04,950 --> 02:44:03,279

elsewhere just fine they played around

4189

02:44:06,790 --> 02:44:04,960

that idea in stargate episode two one of

4190

02:44:09,429 --> 02:44:06,800

the best ones that had the

4191

02:44:11,110 --> 02:44:09,439

bowl of fruit loops in it i can't wait

4192

02:44:12,469 --> 02:44:11,120

right now but they finish up a day

4193

02:44:14,389 --> 02:44:12,479

that's been groundhog day and over and

4194

02:44:16,389 --> 02:44:14,399

over again and they find out that uh the

4195

02:44:17,750 --> 02:44:16,399

rest of the universe has seen like ben

4196

02:44:18,870 --> 02:44:17,760

you had three months go by in the

4197

02:44:21,910 --> 02:44:18,880

meantime i wasn't able to get in touch

4198

02:44:24,309 --> 02:44:21,920

with anybody um but uh you know we don't

4199

02:44:26,230 --> 02:44:24,319

know how that would work but time

4200

02:44:27,110 --> 02:44:26,240

paradoxes that are happening here on

4201

02:44:29,269 --> 02:44:27,120

earth

4202

02:44:30,710 --> 02:44:29,279

wouldn't have radiated out to some place

4203

02:44:33,190 --> 02:44:30,720

further away from the universe from us

4204

02:44:35,030 --> 02:44:33,200

that it takes time to get there too we

4205

02:44:36,550 --> 02:44:35,040

think you know it is

4206

02:44:38,070 --> 02:44:36,560

one of those ones where there are so

4207

02:44:39,510 --> 02:44:38,080

many different ways it could walk and

4208

02:44:41,030 --> 02:44:39,520

say well that's not how time travel

4209

02:44:42,550 --> 02:44:41,040

works and that and i know people tend to

4210

02:44:44,389 --> 02:44:42,560

do that i was like well the science says

4211

02:44:45,590 --> 02:44:44,399

that's not how time travel works no it

4212

02:44:47,269 --> 02:44:45,600

doesn't the science doesn't tell us

4213

02:44:49,990 --> 02:44:47,279

anything about how it does work it just

4214

02:44:52,230 --> 02:44:50,000

tells us if x y or z theory is true i

4215

02:44:54,870 --> 02:44:52,240

wish there are many here's how it might

4216

02:44:56,349 --> 02:44:54,880

work so a lot i mean tv and movies mess

4217

02:44:58,790 --> 02:44:56,359

it up really bad in terms of

4218

02:45:00,469 --> 02:44:58,800

inconsistencies but there's no core

4219

02:45:02,710 --> 02:45:00,479

theory of how time travel really works

4220

02:45:04,150 --> 02:45:02,720

that's been proven

4221

02:45:07,670 --> 02:45:04,160

the uh

4222

02:45:08,950 --> 02:45:07,680

the the other part of this which um

4223

02:45:11,750 --> 02:45:08,960

okay so

4224

02:45:12,830 --> 02:45:11,760

let's let's look at it like this

4225

02:45:21,190 --> 02:45:12,840

if

4226

02:45:25,269 --> 02:45:21,200

the technology is arrived at

4227

02:45:28,070 --> 02:45:25,279

it would be like instantly weaponized

4228

02:45:30,550 --> 02:45:28,080

but i don't think it would be weaponized

4229

02:45:34,070 --> 02:45:30,560

in the way that people think in other

4230

02:45:36,550 --> 02:45:34,080

words uh russia gets it and they want to

4231

02:45:38,070 --> 02:45:36,560

mess with us so they they go back to

4232

02:45:40,070 --> 02:45:38,080

1945

4233

02:45:43,349 --> 02:45:40,080

and kill oppenheimer we don't have the

4234

02:45:46,070 --> 02:45:43,359

bomb they do right all right but no i i

4235

02:45:48,150 --> 02:45:46,080

don't think that's how it would go down

4236

02:45:50,309 --> 02:45:48,160

i think i should way more convoluted and

4237

02:45:52,070 --> 02:45:50,319

crazy to that it just

4238

02:45:55,510 --> 02:45:52,080

well i think i think russia would just

4239

02:45:57,910 --> 02:45:55,520

go back uh to 1776 and

4240

02:46:00,389 --> 02:45:57,920

and and kill george washington and the

4241

02:46:02,230 --> 02:46:00,399

united states doesn't exist at all

4242

02:46:03,990 --> 02:46:02,240

well what about a future form of

4243

02:46:05,990 --> 02:46:04,000

whatever the civilization is that

4244

02:46:07,910 --> 02:46:06,000

decides to deal with that situation from

4245

02:46:09,750 --> 02:46:07,920

10 000 years in the future there's

4246

02:46:11,429 --> 02:46:09,760

really only two places depending on how

4247

02:46:13,190 --> 02:46:11,439

you want to look at it that are safe for

4248

02:46:14,309 --> 02:46:13,200

a time traveler the very beginning of

4249

02:46:16,230 --> 02:46:14,319

the universe and the very end of the

4250

02:46:17,349 --> 02:46:16,240

universe so the heat death universe

4251

02:46:18,870 --> 02:46:17,359

everything is basically on our way to

4252

02:46:20,469 --> 02:46:18,880

statistical noise or you couldn't even

4253

02:46:22,150 --> 02:46:20,479

tell about the past so

4254

02:46:23,429 --> 02:46:22,160

you you know you could have people from

4255

02:46:25,990 --> 02:46:23,439

very near the end of the universe that

4256

02:46:27,269 --> 02:46:26,000

were deciding to interact back in time

4257

02:46:29,190 --> 02:46:27,279

to make sure you didn't screw with

4258

02:46:30,710 --> 02:46:29,200

faking to where they were at or vice

4259

02:46:31,990 --> 02:46:30,720

versa that you did

4260

02:46:34,790 --> 02:46:32,000

i think steven baxter played with that

4261

02:46:35,990 --> 02:46:34,800

idea in one of his novels um

4262

02:46:38,070 --> 02:46:36,000

it's not gonna be something as simple as

4263

02:46:40,469 --> 02:46:38,080

let's go back in time and kill hitler um

4264

02:46:42,469 --> 02:46:40,479

he seems to be his own sub genre of

4265

02:46:44,150 --> 02:46:42,479

sci-fi for time travel but you know

4266

02:46:46,710 --> 02:46:44,160

that's not the same for like i want to

4267

02:46:47,910 --> 02:46:46,720

go back in time and save my wife for you

4268

02:46:49,590 --> 02:46:47,920

know etc

4269

02:46:50,630 --> 02:46:49,600

um that's not how that sort of thing is

4270

02:46:52,550 --> 02:46:50,640

really going to work out because you're

4271

02:46:55,190 --> 02:46:52,560

not going to succeed in keeping that

4272

02:46:57,110 --> 02:46:55,200

secret there will be a timeline if you

4273

02:46:59,510 --> 02:46:57,120

have the branching timelines option at

4274

02:47:01,349 --> 02:46:59,520

least right where you didn't succeed in

4275

02:47:04,150 --> 02:47:01,359

keeping it secret and now someone in the

4276

02:47:05,510 --> 02:47:04,160

year 2200 has that technology too and at

4277

02:47:07,590 --> 02:47:05,520

least one of those rallies that go back

4278

02:47:09,349 --> 02:47:07,600

in time and give it to everybody you

4279

02:47:11,590 --> 02:47:09,359

know when is time travel actually

4280

02:47:13,190 --> 02:47:11,600

invented as douglas adams said it was

4281

02:47:15,990 --> 02:47:13,200

invented every time and place the

4282

02:47:17,910 --> 02:47:16,000

universe simultaneously and that uh once

4283

02:47:19,349 --> 02:47:17,920

you have time travel in play the

4284

02:47:21,429 --> 02:47:19,359

universe starts getting to be a lot like

4285

02:47:23,269 --> 02:47:21,439

foreign countries everyone speaks a

4286

02:47:24,950 --> 02:47:23,279

different language but everybody still

4287

02:47:26,070 --> 02:47:24,960

eats uh corn flakes so you can still get

4288

02:47:28,550 --> 02:47:26,080

them anywhere on the wall and they got

4289

02:47:31,269 --> 02:47:28,560

mcdonald's you know

4290

02:47:35,110 --> 02:47:31,279

right douglas adams was a time traveler

4291

02:47:37,990 --> 02:47:35,990

can i

4292

02:47:39,670 --> 02:47:38,000

let's let's branch off onto douglas

4293

02:47:41,910 --> 02:47:39,680

adams for a second

4294

02:47:43,830 --> 02:47:41,920

um you survive for doctor who

4295

02:47:46,550 --> 02:47:43,840

yeah that's right

4296

02:47:48,070 --> 02:47:46,560

his insight

4297

02:47:51,349 --> 02:47:48,080

of

4298

02:47:53,830 --> 02:47:51,359

science fiction and his approach to it

4299

02:47:56,230 --> 02:47:53,840

was singular i think it was more

4300

02:47:58,550 --> 02:47:56,240

brilliant in a lot of ways than than

4301

02:48:01,670 --> 02:47:58,560

ozzie moff and and

4302

02:48:03,910 --> 02:48:01,680

and and uh arthur c clarke who's who's

4303

02:48:06,950 --> 02:48:03,920

my favorite author but but every time i

4304

02:48:09,830 --> 02:48:06,960

get into douglas adams i'm like

4305

02:48:12,950 --> 02:48:09,840

where is this coming from right it's

4306

02:48:15,990 --> 02:48:12,960

like it's like way

4307

02:48:17,830 --> 02:48:16,000

out there such a fascinating

4308

02:48:19,670 --> 02:48:17,840

the waters really made less than a case

4309

02:48:22,469 --> 02:48:19,680

like him where he died so early and on a

4310

02:48:23,590 --> 02:48:22,479

treadmill now he says too um

4311

02:48:25,269 --> 02:48:23,600

right

4312

02:48:27,110 --> 02:48:25,279

you know we had decades of good writing

4313

02:48:28,710 --> 02:48:27,120

on that man and i i missed that and i'm

4314

02:48:30,630 --> 02:48:28,720

sure there'd be a time travel you know

4315

02:48:31,910 --> 02:48:30,640

set up somebody goes back in time and

4316

02:48:34,070 --> 02:48:31,920

you know at least brings it forward to

4317

02:48:35,190 --> 02:48:34,080

write small books but he was great the

4318

02:48:37,670 --> 02:48:35,200

only other author i know who kind of

4319

02:48:39,670 --> 02:48:37,680

parallels him in terms of that just that

4320

02:48:41,750 --> 02:48:39,680

uniquely strange view on things was so

4321

02:48:43,670 --> 02:48:41,760

terry pratchett who also sadly died he

4322

02:48:45,910 --> 02:48:43,680

was kind of douglas adams equivalent for

4323

02:48:47,190 --> 02:48:45,920

fantasy genre but uh this is a

4324

02:48:49,429 --> 02:48:47,200

fascinating view of the world they're

4325

02:48:51,830 --> 02:48:49,439

the only these yeah i

4326

02:48:55,670 --> 02:48:51,840

wish i could write with the creativity

4327

02:48:57,590 --> 02:48:55,680

and humor of of an atoms

4328

02:48:59,750 --> 02:48:57,600

it just came from another place man i

4329

02:49:01,670 --> 02:48:59,760

think he was a time traveler he was the

4330

02:49:03,110 --> 02:49:01,680

he was the science fiction version of

4331

02:49:05,830 --> 02:49:03,120

like david bowie

4332

02:49:07,349 --> 02:49:05,840

i mean just completely completely way

4333

02:49:11,830 --> 02:49:07,359

out

4334

02:49:15,990 --> 02:49:11,840

the more that uh i watch and read and by

4335

02:49:17,750 --> 02:49:16,000

the way um i spent this last year

4336

02:49:19,750 --> 02:49:17,760

uh reading hitchhiker's guide to the

4337

02:49:22,389 --> 02:49:19,760

galaxy now i read it in high school when

4338

02:49:25,990 --> 02:49:22,399

i was a kid you know 40 years ago

4339

02:49:28,950 --> 02:49:26,000

um and didn't quite get it i enjoyed it

4340

02:49:30,230 --> 02:49:28,960

i was smoking too much weed but but i i

4341

02:49:32,710 --> 02:49:30,240

enjoyed it

4342

02:49:34,389 --> 02:49:32,720

um but when you go back and you read it

4343

02:49:35,590 --> 02:49:34,399

after you're you know you're smarter and

4344

02:49:38,950 --> 02:49:35,600

you're older

4345

02:49:40,389 --> 02:49:38,960

it is the most complex deepest book i

4346

02:49:42,710 --> 02:49:40,399

think i've ever read

4347

02:49:43,990 --> 02:49:42,720

there is so many layers to it and it's

4348

02:49:45,110 --> 02:49:44,000

one of the advantages of i'm trying to

4349

02:49:47,429 --> 02:49:45,120

think of there's another couple authors

4350

02:49:50,230 --> 02:49:47,439

to do meta stuff when you are writing

4351
02:49:51,429 --> 02:49:50,240
the deconstructions of a series when you

4352
02:49:52,950 --> 02:49:51,439
get to be the one who's doing the

4353
02:49:55,830 --> 02:49:52,960
deconstruction of a genre things like

4354
02:49:58,550 --> 02:49:55,840
that you can pack so much into it that

4355
02:50:00,070 --> 02:49:58,560
that's otherwise not there um

4356
02:50:01,190 --> 02:50:00,080
dennis e taylor i'm a friend of mine

4357
02:50:03,349 --> 02:50:01,200
actually i can't believe i forgot him on

4358
02:50:05,670 --> 02:50:03,359
this he also he does serious sci-fi but

4359
02:50:08,070 --> 02:50:05,680
he does sci-fi written for people who

4360
02:50:09,349 --> 02:50:08,080
who definitely know their genre and

4361
02:50:11,269 --> 02:50:09,359
there's the same thing and there's so

4362
02:50:12,710 --> 02:50:11,279
many deconstructions of

4363
02:50:14,230 --> 02:50:12,720

concepts that we take for granted those

4364

02:50:16,230 --> 02:50:14,240

of us who have been growing up on star

4365

02:50:17,429 --> 02:50:16,240

trek and doctor who and just kind of

4366

02:50:19,510 --> 02:50:17,439

looks for them and it's kind of what i

4367

02:50:21,910 --> 02:50:19,520

try to do on the show too so i i

4368

02:50:24,230 --> 02:50:21,920

probably am biased on the matter i love

4369

02:50:25,429 --> 02:50:24,240

that yeah i don't write fiction per se

4370

02:50:27,190 --> 02:50:25,439

but i love

4371

02:50:29,750 --> 02:50:27,200

being able to discuss those ideas in a

4372

02:50:31,190 --> 02:50:29,760

scientific context and you'll be able to

4373

02:50:33,030 --> 02:50:31,200

describe you know deconstruct those

4374

02:50:35,349 --> 02:50:33,040

cliches and things like that it's like a

4375

02:50:37,429 --> 02:50:35,359

whole alien civilization series

4376

02:50:39,590 --> 02:50:37,439

um and

4377

02:50:40,870 --> 02:50:39,600

folks like adams

4378

02:50:43,590 --> 02:50:40,880

you know say well yeah he's writing for

4379

02:50:44,950 --> 02:50:43,600

parody he's writing for satire but

4380

02:50:46,950 --> 02:50:44,960

that is

4381

02:50:48,550 --> 02:50:46,960

one of the most

4382

02:50:49,830 --> 02:50:48,560

beautiful ways to actually look at the

4383

02:50:51,590 --> 02:50:49,840

universe and one of the most important

4384

02:50:53,990 --> 02:50:51,600

ones is through that satire on parity

4385

02:50:55,830 --> 02:50:54,000

tones you know viewpoint and we you know

4386

02:50:57,910 --> 02:50:55,840

most scientists these least in physics

4387

02:50:59,670 --> 02:50:57,920

are pretty open to acknowledging they

4388

02:51:01,590 --> 02:50:59,680

got their sci-fi roots but you had a

4389

02:51:03,190 --> 02:51:01,600

period in time where most of them do

4390

02:51:05,510 --> 02:51:03,200

they do not want to look at or discuss a

4391

02:51:06,870 --> 02:51:05,520

lot of the sci-fi notions

4392

02:51:07,910 --> 02:51:06,880

that often with what got them interested

4393

02:51:10,309 --> 02:51:07,920

in science in the first place were

4394

02:51:12,309 --> 02:51:10,319

fiona's being seen as not serious or

4395

02:51:14,469 --> 02:51:12,319

getting rejected by their academic peers

4396

02:51:16,309 --> 02:51:14,479

i'm very glad to say that period of

4397

02:51:18,150 --> 02:51:16,319

snobbery and fear seems to have passed

4398

02:51:19,349 --> 02:51:18,160

too and that uh scientists don't seem to

4399

02:51:21,030 --> 02:51:19,359

have any problem talking about a lot of

4400

02:51:22,230 --> 02:51:21,040

these concepts the same thing with like

4401
02:51:24,070 --> 02:51:22,240
the department of defense we talked

4402
02:51:26,150 --> 02:51:24,080
about well whether or not you believe in

4403
02:51:27,910 --> 02:51:26,160
ufos it was really weird that for

4404
02:51:29,670 --> 02:51:27,920
decades they acted as though it was

4405
02:51:31,510 --> 02:51:29,680
impossible and crazy that we might have

4406
02:51:33,910 --> 02:51:31,520
had one and so that wasn't really

4407
02:51:35,429 --> 02:51:33,920
logical or scientific and even for those

4408
02:51:36,950 --> 02:51:35,439
of us who were on the skeptical side

4409
02:51:38,790 --> 02:51:36,960
with strange behavior but they didn't

4410
02:51:40,710 --> 02:51:38,800
want to be seen as going to that crazy

4411
02:51:42,870 --> 02:51:40,720
discussion area now it's okay to talk

4412
02:51:44,469 --> 02:51:42,880
about you know now it's okay to talk

4413
02:51:46,469 --> 02:51:44,479

about sightings or things like that as

4414

02:51:48,790 --> 02:51:46,479

though they were not something that's

4415

02:51:50,710 --> 02:51:48,800

just for folks uh who might be a little

4416

02:51:52,309 --> 02:51:50,720

off their aqua and it's actually not

4417

02:51:54,790 --> 02:51:52,319

popular without them to talk about a bit

4418

02:51:56,550 --> 02:51:54,800

so i am glad to see that kind of thing

4419

02:51:59,190 --> 02:51:56,560

and that there's no longer that fear to

4420

02:52:00,710 --> 02:51:59,200

discuss the sci-fi use ideas or the on

4421

02:52:02,469 --> 02:52:00,720

the edge ideas as though you're going to

4422

02:52:03,830 --> 02:52:02,479

ruin your career for looking at them as

4423

02:52:06,150 --> 02:52:03,840

serious light

4424

02:52:08,150 --> 02:52:06,160

well isn't that the case though that

4425

02:52:10,150 --> 02:52:08,160

uh with uh

4426
02:52:11,830 --> 02:52:10,160
you know douglas adams or star trek or

4427
02:52:13,349 --> 02:52:11,840
azimov or

4428
02:52:17,349 --> 02:52:13,359
arthur c clarke

4429
02:52:20,309 --> 02:52:17,359
where it is fiction based in science but

4430
02:52:22,790 --> 02:52:20,319
the creativity part of that

4431
02:52:25,349 --> 02:52:22,800
is what is missing with a lot of

4432
02:52:27,750 --> 02:52:25,359
engineers and engineering students you

4433
02:52:30,389 --> 02:52:27,760
can geek out on numbers

4434
02:52:32,389 --> 02:52:30,399
you need the stimulus you need the

4435
02:52:35,110 --> 02:52:32,399
creativity side

4436
02:52:37,110 --> 02:52:35,120
uh and then you can go and run with the

4437
02:52:39,030 --> 02:52:37,120
idea like the warp drive right well the

4438
02:52:40,550 --> 02:52:39,040

warp drive was just something that was

4439

02:52:42,550 --> 02:52:40,560

that was in science fiction or

4440

02:52:44,550 --> 02:52:42,560

satellites or whatever you know arthur c

4441

02:52:46,790 --> 02:52:44,560

clarke did and things but

4442

02:52:49,910 --> 02:52:46,800

if you plant the seed

4443

02:52:52,710 --> 02:52:49,920

with a real engineer that can deal with

4444

02:52:54,870 --> 02:52:52,720

the quantum side of things and and and

4445

02:52:57,269 --> 02:52:54,880

steer your way through the map then you

4446

02:52:59,030 --> 02:52:57,279

can invent these things and that's what

4447

02:53:00,950 --> 02:52:59,040

science fiction has always given us

4448

02:53:02,630 --> 02:53:00,960

right if you can't invent them then you

4449

02:53:04,790 --> 02:53:02,640

can at least explore the idea or maybe

4450

02:53:05,910 --> 02:53:04,800

find some parallel that works you know a

4451

02:53:07,110 --> 02:53:05,920

lot of things that we come up with in

4452

02:53:08,790 --> 02:53:07,120

sci-fi are probably going to turn out to

4453

02:53:10,790 --> 02:53:08,800

be impossible in long run but there will

4454

02:53:12,469 --> 02:53:10,800

be something that we didn't see coming

4455

02:53:14,790 --> 02:53:12,479

this is not the war that was predicted

4456

02:53:16,950 --> 02:53:14,800

by star trek in some ways it's better in

4457

02:53:18,389 --> 02:53:16,960

some ways it's worse i think canon wise

4458

02:53:19,990 --> 02:53:18,399

we should be a nuclear landscape at the

4459

02:53:21,990 --> 02:53:20,000

moment having blown up i can't remember

4460

02:53:24,469 --> 02:53:22,000

quite what the timeline went there but

4461

02:53:25,830 --> 02:53:24,479

it is it's a reality that you have to

4462

02:53:27,910 --> 02:53:25,840

have folks

4463

02:53:29,910 --> 02:53:27,920

playing with the creative idea of things

4464

02:53:31,590 --> 02:53:29,920

and some of the best sci-fi is written

4465

02:53:34,230 --> 02:53:31,600

by guys who have doctorates in the field

4466

02:53:35,990 --> 02:53:34,240

like well david brin you know uh he's an

4467

02:53:37,910 --> 02:53:36,000

absolute master of telling good stories

4468

02:53:39,590 --> 02:53:37,920

and he is a good scientist too on top of

4469

02:53:42,230 --> 02:53:39,600

like gregory benford or alastair

4470

02:53:43,830 --> 02:53:42,240

reynolds others you know uh rogers lazy

4471

02:53:45,910 --> 02:53:43,840

one of my favorite sci-fi right was very

4472

02:53:47,910 --> 02:53:45,920

creative played a lot with uh you know

4473

02:53:50,230 --> 02:53:47,920

existential dread things like that he

4474

02:53:51,269 --> 02:53:50,240

was uh his master's was literature not a

4475

02:53:52,790 --> 02:53:51,279

scientist

4476
02:53:53,990 --> 02:53:52,800
he knew a fair amount about it you know

4477
02:53:56,230 --> 02:53:54,000
because you don't have to actually

4478
02:53:58,630 --> 02:53:56,240
degree in things know them but uh that

4479
02:54:00,389 --> 02:53:58,640
was not his area you know

4480
02:54:02,790 --> 02:54:00,399
a lot of good fiction does not require

4481
02:54:05,190 --> 02:54:02,800
that background yeah it's funny that you

4482
02:54:06,790 --> 02:54:05,200
say that because when we look at some of

4483
02:54:07,670 --> 02:54:06,800
the greats and everybody wants to talk

4484
02:54:09,910 --> 02:54:07,680
about

4485
02:54:11,830 --> 02:54:09,920
azam off and and well even gene

4486
02:54:13,990 --> 02:54:11,840
roddenberry and of course our thirsty

4487
02:54:15,910 --> 02:54:14,000
clark was the lack of character

4488
02:54:17,510 --> 02:54:15,920

development right

4489

02:54:19,110 --> 02:54:17,520

i love asthma if i'm literally named for

4490

02:54:21,910 --> 02:54:19,120

the guy but he was not good at character

4491

02:54:25,429 --> 02:54:21,920

development zero

4492

02:54:27,750 --> 02:54:25,439

zero and i mean to excuse if if you're

4493

02:54:29,429 --> 02:54:27,760

interested in characters and personality

4494

02:54:32,150 --> 02:54:29,439

and conversation the last thing you want

4495

02:54:34,790 --> 02:54:32,160

to do is read a arthur c clarke book

4496

02:54:37,910 --> 02:54:34,800

you know and he brought in gentry lee to

4497

02:54:39,750 --> 02:54:37,920

uh kind of uh some of that it helped and

4498

02:54:41,510 --> 02:54:39,760

i i mean i liked the first sequel that

4499

02:54:43,590 --> 02:54:41,520

he did eventually i didn't care for the

4500

02:54:44,870 --> 02:54:43,600

next two books after that but uh and

4501

02:54:46,150 --> 02:54:44,880

then that's not knocking either

4502

02:54:48,950 --> 02:54:46,160

obviously they're both very very good

4503

02:54:50,630 --> 02:54:48,960

writers uh but uh i didn't feel like i'm

4504

02:54:52,469 --> 02:54:50,640

really looking forward to seeing what

4505

02:54:54,550 --> 02:54:52,479

i've never announced his last name right

4506

02:54:56,070 --> 02:54:54,560

the gentleman who just directed dune

4507

02:54:58,230 --> 02:54:56,080

he's going to be doing money with robert

4508

02:55:00,630 --> 02:54:58,240

yeah yeah i i i can never say his last

4509

02:55:01,670 --> 02:55:00,640

name that's villanova

4510

02:55:06,870 --> 02:55:01,680

yeah

4511

02:55:08,309 --> 02:55:06,880

re-watched uh the new version of dune

4512

02:55:09,190 --> 02:55:08,319

you know what i'm going to say it's not

4513

02:55:11,110 --> 02:55:09,200

bad

4514

02:55:13,990 --> 02:55:11,120

it's not the new version yeah i love the

4515

02:55:16,070 --> 02:55:14,000

new version it's not bad it's not bad

4516

02:55:17,990 --> 02:55:16,080

one time the david lynch dune was my

4517

02:55:21,990 --> 02:55:18,000

second favorite movie i have to blade

4518

02:55:23,590 --> 02:55:22,000

runner and um you know

4519

02:55:25,670 --> 02:55:23,600

yeah i still love the david lynch

4520

02:55:27,830 --> 02:55:25,680

version you know what i do

4521

02:55:30,150 --> 02:55:27,840

okay all right i'm just gonna say this

4522

02:55:32,550 --> 02:55:30,160

we're in overtime so i can be i can be i

4523

02:55:35,190 --> 02:55:32,560

can border on being a little bit of a

4524

02:55:37,190 --> 02:55:35,200

dick here timothy what's his last name

4525

02:55:38,870 --> 02:55:37,200

chalamet or what however you say his

4526
02:55:40,630 --> 02:55:38,880
last name um

4527
02:55:41,830 --> 02:55:40,640
his character

4528
02:55:42,830 --> 02:55:41,840
um

4529
02:55:44,389 --> 02:55:42,840
is

4530
02:55:49,269 --> 02:55:44,399
too

4531
02:55:50,070 --> 02:55:49,279
he runs and jumps in the arms of uh

4532
02:55:53,349 --> 02:55:50,080
of

4533
02:55:56,230 --> 02:55:53,359
way too many times

4534
02:55:57,269 --> 02:55:56,240
you know and jumps on him and does it

4535
02:55:59,429 --> 02:55:57,279
there's

4536
02:56:01,110 --> 02:55:59,439
i i don't understand that i think

4537
02:56:02,309 --> 02:56:01,120
they're trying to you know every time

4538
02:56:03,830 --> 02:56:02,319

they try to produce this movie they're

4539

02:56:05,110 --> 02:56:03,840

trying to start by showing a young paul

4540

02:56:06,790 --> 02:56:05,120

and he's got involved in a much more

4541

02:56:08,870 --> 02:56:06,800

serious character but right it was an

4542

02:56:10,309 --> 02:56:08,880

example of a surprise i've loved jason

4543

02:56:12,230 --> 02:56:10,319

momoa since he first appeared in

4544

02:56:13,990 --> 02:56:12,240

stargate atlantis even though i i really

4545

02:56:16,870 --> 02:56:14,000

like the character it plays uh by i

4546

02:56:18,710 --> 02:56:16,880

can't was his full name rainbow um but

4547

02:56:20,469 --> 02:56:18,720

um i was when i heard he was being cast

4548

02:56:23,190 --> 02:56:20,479

in that movie i thought oh they're gonna

4549

02:56:24,389 --> 02:56:23,200

have him play in stilgar or bistro band

4550

02:56:26,389 --> 02:56:24,399

and they're like casting his dunkin

4551
02:56:29,670 --> 02:56:26,399
hunter i was like what yeah yeah but no

4552
02:56:31,910 --> 02:56:29,680
he he did that well amazing he goes with

4553
02:56:34,309 --> 02:56:31,920
that one yeah no no no no you're right

4554
02:56:37,670 --> 02:56:34,319
about that he was great in that part

4555
02:56:38,630 --> 02:56:37,680
but you can't have paul atreides

4556
02:56:41,510 --> 02:56:38,640
um

4557
02:56:42,870 --> 02:56:41,520
running oh you know dunk you know and

4558
02:56:46,070 --> 02:56:42,880
and jump in it

4559
02:56:47,110 --> 02:56:46,080
it it they always i i love all three of

4560
02:56:49,349 --> 02:56:47,120
the the

4561
02:56:51,349 --> 02:56:49,359
film adaptations including the dune mini

4562
02:56:53,110 --> 02:56:51,359
series on sci-fi but

4563
02:56:56,070 --> 02:56:53,120

when they've always tried to show polish

4564

02:56:57,349 --> 02:56:56,080

jungle sai he always comes off as like

4565

02:57:00,790 --> 02:56:57,359

in the mini series he comes off as a

4566

02:57:04,389 --> 02:57:02,550

for some reason the young poe is not not

4567

02:57:06,309 --> 02:57:04,399

somebody you really want to know or like

4568

02:57:08,309 --> 02:57:06,319

um but i mean the movie has its

4569

02:57:09,429 --> 02:57:08,319

weaknesses we watching it uh you know

4570

02:57:11,429 --> 02:57:09,439

it's it's definitely there there are

4571

02:57:13,269 --> 02:57:11,439

some some structural ones of native ones

4572

02:57:15,670 --> 02:57:13,279

but i still say it's an amazing

4573

02:57:18,389 --> 02:57:15,680

adaptation so i loved it it's so good i

4574

02:57:20,550 --> 02:57:18,399

can't wait for the next uh the next i i

4575

02:57:21,990 --> 02:57:20,560

knew when it ended i was like man

4576

02:57:23,349 --> 02:57:22,000

they're saying that they don't know if

4577

02:57:24,950 --> 02:57:23,359

they're gonna

4578

02:57:27,030 --> 02:57:24,960

that was written

4579

02:57:29,110 --> 02:57:27,040

they're already in production well it's

4580

02:57:30,870 --> 02:57:29,120

like the original foundation novel uh

4581

02:57:33,510 --> 02:57:30,880

your short story as we've left the

4582

02:57:34,550 --> 02:57:33,520

ending off uh as being really obvious

4583

02:57:36,389 --> 02:57:34,560

because it wouldn't even be said was

4584

02:57:38,870 --> 02:57:36,399

really just to make sure the publisher

4585

02:57:41,030 --> 02:57:38,880

had a space fun to do with part two and

4586

02:57:42,710 --> 02:57:41,040

when i get paid you know that's all that

4587

02:57:43,429 --> 02:57:42,720

elsa used to say oh yeah you paid for

4588

02:57:46,550 --> 02:57:43,439

this

4589

02:57:48,070 --> 02:57:46,560

um but uh i think that you know they

4590

02:57:49,429 --> 02:57:48,080

left that they are knowing that they

4591

02:57:51,030 --> 02:57:49,439

probably would get renewed unless it was

4592

02:57:52,550 --> 02:57:51,040

bad in which case i was gonna no one's

4593

02:57:54,389 --> 02:57:52,560

gonna like you do a bad adaptation that

4594

02:57:55,429 --> 02:57:54,399

ends halfway through nobody cares

4595

02:57:57,590 --> 02:57:55,439

because they don't wanna remember the

4596

02:57:59,750 --> 02:57:57,600

movie even existed battlefield auth

4597

02:58:01,670 --> 02:57:59,760

that's just the first half of that book

4598

02:58:03,269 --> 02:58:01,680

and i gotta say that that was the first

4599

02:58:04,469 --> 02:58:03,279

time i always thought you saw a movie

4600

02:58:06,870 --> 02:58:04,479

and you read the book the book's gonna

4601
02:58:08,469 --> 02:58:06,880
be good better than the book movie was

4602
02:58:10,309 --> 02:58:08,479
my roommate suggested i read the book

4603
02:58:11,750 --> 02:58:10,319
after i saw it because i hated the film

4604
02:58:13,670 --> 02:58:11,760
and i didn't care for the book much at

4605
02:58:15,590 --> 02:58:13,680
all it was quite possibly the worst

4606
02:58:17,030 --> 02:58:15,600
movie ever made in the history of

4607
02:58:19,190 --> 02:58:17,040
hollywood

4608
02:58:20,950 --> 02:58:19,200
certainly the best known blockbuster

4609
02:58:22,230 --> 02:58:20,960
failure i mean

4610
02:58:23,510 --> 02:58:22,240
for the amount of money thrown at that

4611
02:58:25,110 --> 02:58:23,520
that should have been a lot better of a

4612
02:58:27,190 --> 02:58:25,120
fail and i don't like to beat up on it

4613
02:58:29,510 --> 02:58:27,200

across the board because like

4614

02:58:32,230 --> 02:58:29,520

it's horrible it's horrible

4615

02:58:34,550 --> 02:58:32,240

i mean and travolta who we all love and

4616

02:58:36,630 --> 02:58:34,560

he's never really messed up a role

4617

02:58:38,389 --> 02:58:36,640

except for that except for that

4618

02:58:40,630 --> 02:58:38,399

you know what i've watched uh we're at

4619

02:58:41,990 --> 02:58:40,640

the end of the night but i i do want to

4620

02:58:45,510 --> 02:58:42,000

say this though

4621

02:58:48,469 --> 02:58:45,520

i have watched over and over again and i

4622

02:58:51,670 --> 02:58:48,479

i i'm never getting tired of it

4623

02:58:54,389 --> 02:58:51,680

is the three-part childhood's end

4624

02:58:56,469 --> 02:58:54,399

i think it's an extraordinary adaptation

4625

02:58:58,389 --> 02:58:56,479

and and i'm glad that they did it in

4626
02:59:01,910 --> 02:58:58,399
three parts because it's too complex of

4627
02:59:03,750 --> 02:59:01,920
a of a story but i think that is that is

4628
02:59:06,469 --> 02:59:03,760
right up there with the best of the best

4629
02:59:08,950 --> 02:59:06,479
yeah i think one thing i would say is we

4630
02:59:11,269 --> 02:59:08,960
have a lot more adaptations into tv now

4631
02:59:12,710 --> 02:59:11,279
than a longer series and i'm i think a

4632
02:59:15,110 --> 02:59:12,720
lot of things will do better in that

4633
02:59:16,630 --> 02:59:15,120
format too although i was surprised they

4634
02:59:18,870 --> 02:59:16,640
decided to find you the foundation as

4635
02:59:20,630 --> 02:59:18,880
one and that they made all the normal

4636
02:59:21,510 --> 02:59:20,640
changes you'd expect for a condensed

4637
02:59:22,950 --> 02:59:21,520
movie

4638
02:59:24,469 --> 02:59:22,960

when they could do their time in the

4639

02:59:26,870 --> 02:59:24,479

budget to actually done it right and

4640

02:59:27,990 --> 02:59:26,880

while i did love the clean subtract i

4641

02:59:29,670 --> 02:59:28,000

still haven't seen the end of the fourth

4642

02:59:31,349 --> 02:59:29,680

season yet because i got very

4643

02:59:34,230 --> 02:59:31,359

disenchanted with what was going on the

4644

02:59:36,150 --> 02:59:34,240

main plot line there so but uh you know

4645

02:59:38,150 --> 02:59:36,160

it had the visuals and had good

4646

02:59:40,710 --> 02:59:38,160

storytelling if it had not actually been

4647

02:59:43,670 --> 02:59:40,720

the foundation it was a great sci-fi fun

4648

02:59:45,910 --> 02:59:43,680

for myself

4649

02:59:48,070 --> 02:59:45,920

have done it right and they still

4650

02:59:49,910 --> 02:59:48,080

decided to change the script i you know

4651
02:59:50,630 --> 02:59:49,920
what i did with foundation

4652
02:59:56,710 --> 02:59:50,640
i

4653
02:59:59,830 --> 02:59:56,720
just accepted

4654
03:00:02,309 --> 02:59:59,840
it as as it was and and so i will say

4655
03:00:04,550 --> 03:00:02,319
that if you enjoyed it for itself and

4656
03:00:06,309 --> 03:00:04,560
you hadn't read the books it's great

4657
03:00:08,790 --> 03:00:06,319
just right just treat like starship

4658
03:00:10,230 --> 03:00:08,800
troopers the movie right yeah i had not

4659
03:00:12,309 --> 03:00:10,240
read starship troopers the book when i

4660
03:00:14,070 --> 03:00:12,319
saw the film they have nothing to do

4661
03:00:15,910 --> 03:00:14,080
with each other at all and i really

4662
03:00:17,830 --> 03:00:15,920
think paul verhoeven should have done a

4663
03:00:19,429 --> 03:00:17,840

different name right you know he

4664

03:00:20,950 --> 03:00:19,439

probably deserves a kick in the butt for

4665

03:00:23,030 --> 03:00:20,960

that one but

4666

03:00:25,110 --> 03:00:23,040

one's a good movie it's pulpits camp

4667

03:00:27,429 --> 03:00:25,120

yellow is a great book they are

4668

03:00:29,670 --> 03:00:27,439

unrelated except for theoretical names

4669

03:00:31,750 --> 03:00:29,680

well you know i went back and read

4670

03:00:33,510 --> 03:00:31,760

starship troopers the book after i saw

4671

03:00:34,870 --> 03:00:33,520

the movie and you're right two different

4672

03:00:37,110 --> 03:00:34,880

things but man

4673

03:00:39,510 --> 03:00:37,120

that is uh

4674

03:00:41,190 --> 03:00:39,520

that is a racist

4675

03:00:42,070 --> 03:00:41,200

gnarly

4676

03:00:44,790 --> 03:00:42,080

uh

4677

03:00:46,389 --> 03:00:44,800

difficult to read this is a weird one

4678

03:00:48,550 --> 03:00:46,399

because so much the beautiful that was

4679

03:00:50,870 --> 03:00:48,560

to actually have the last page where the

4680

03:00:52,309 --> 03:00:50,880

characters revealed to be hispanic

4681

03:00:53,990 --> 03:00:52,319

rather than you know the traditional

4682

03:00:55,590 --> 03:00:54,000

white guy however i don't think it

4683

03:00:56,550 --> 03:00:55,600

really quite worked out as ideally as it

4684

03:00:57,830 --> 03:00:56,560

would you know a lot of times when

4685

03:00:59,590 --> 03:00:57,840

people try to

4686

03:01:01,030 --> 03:00:59,600

you read a lot of old sci-fi they are

4687

03:01:02,950 --> 03:01:01,040

trying to be

4688

03:01:05,110 --> 03:01:02,960

the the you know non-bigoted

4689

03:01:07,670 --> 03:01:05,120

forward-thinking people and yet often

4690

03:01:09,750 --> 03:01:07,680

reads very bad for its time oh it's

4691

03:01:13,030 --> 03:01:09,760

insane and you can't even like i love

4692

03:01:15,910 --> 03:01:13,040

lovecraft uh but oh yeah that guy was so

4693

03:01:17,429 --> 03:01:15,920

racist it's so racist

4694

03:01:20,230 --> 03:01:17,439

racist

4695

03:01:22,150 --> 03:01:20,240

uh isaac what a what a great show and

4696

03:01:24,070 --> 03:01:22,160

now what night of the week uh do you

4697

03:01:25,990 --> 03:01:24,080

come out with your new episodes well the

4698

03:01:28,389 --> 03:01:26,000

new episode could be coming out at uh

4699

03:01:30,630 --> 03:01:28,399

thursday morning in exactly eight hours

4700

03:01:32,950 --> 03:01:30,640

will you hang out with million refugees

4701
03:01:34,710 --> 03:01:32,960
and if you love the fermi paradox and

4702
03:01:36,550 --> 03:01:34,720
time travel concepts we got a bunch of

4703
03:01:39,510 --> 03:01:36,560
them for the rest of the month our

4704
03:01:41,750 --> 03:01:39,520
time wars episode and our fermi paradox

4705
03:01:43,510 --> 03:01:41,760
uh technological time bombs episode

4706
03:01:46,870 --> 03:01:43,520
coming up in this month

4707
03:01:48,710 --> 03:01:46,880
great filter number 986

4708
03:01:51,510 --> 03:01:48,720
will be revealed

4709
03:01:53,990 --> 03:01:51,520
isaac you are the absolute very best my

4710
03:01:56,710 --> 03:01:54,000
friend congratulations to your success

4711
03:01:59,590 --> 03:01:56,720
you you deserve all of it but it just

4712
03:02:02,230 --> 03:01:59,600
tells me that uh this world

4713
03:02:04,710 --> 03:02:02,240

loves this stuff and you're an example

4714

03:02:06,230 --> 03:02:04,720

of why so thank you so much my friend

4715

03:02:08,309 --> 03:02:06,240

thank you for having me on maggie and

4716

03:02:10,070 --> 03:02:08,319

it's been great you're the best man

4717

03:02:12,469 --> 03:02:10,080

isaac arthur thank you so much we just

4718

03:02:14,710 --> 03:02:12,479

went i'm looking at the clock here i've

4719

03:02:16,870 --> 03:02:14,720

got to get out of here i'm about to get

4720

03:02:18,950 --> 03:02:16,880

kicked off the network in about 15

4721

03:02:21,030 --> 03:02:18,960

seconds so i am going to get straight to

4722

03:02:22,790 --> 03:02:21,040

it thank you so much isaac isaac stay

4723

03:02:24,150 --> 03:02:22,800

right there we'll say good night here in

4724

03:02:26,070 --> 03:02:24,160

a couple of minutes

4725

03:02:27,640 --> 03:02:26,080

fade to black is produced by hilton j

4726

03:02:28,790 --> 03:02:27,650

palm renee dennis and kevin

4727

03:02:30,870 --> 03:02:28,800

[Music]

4728

03:02:33,110 --> 03:02:30,880

announcers are steve harter gene vettel

4729

03:02:35,670 --> 03:02:33,120

mark d kovar webmaster is drew the geek

4730

03:02:37,990 --> 03:02:35,680

music doug aldrige intro space boy

4731

03:02:39,910 --> 03:02:38,000

space boy music dot com fade to black is

4732

03:02:41,510 --> 03:02:39,920

produced by kjcr for the game changer

4733

03:02:43,670 --> 03:02:41,520

network was broadcasted on the

4734

03:02:45,510 --> 03:02:43,680

copyrighted 2022 by fade to black and

4735

03:02:47,349 --> 03:02:45,520

the game changer network inc it cannot

4736

03:02:48,870 --> 03:02:47,359

be re-broadcast downloaded copied or

4737

03:02:50,469 --> 03:02:48,880

used anywhere in the known universe

4738

03:02:52,070 --> 03:02:50,479

without written permission from fade to

4739

03:02:53,990 --> 03:02:52,080

black or the game changer network i'll

4740

03:02:56,550 --> 03:02:54,000

see everybody tomorrow night for fader

4741

03:02:58,630 --> 03:02:56,560

night until then be safe

4742

03:03:06,890 --> 03:02:58,640

go backly tappy