

T H A T

# U F O

P O D C A S T

Λ V I Λ O Ε Β



1  
00:00:05,510 --> 00:00:03,830  
there's a whole fleet of look on the

2  
00:00:07,749 --> 00:00:05,520  
assay

3  
00:00:11,110 --> 00:00:07,759  
oh my gosh they're all going against the

4  
00:00:15,749 --> 00:00:13,270  
it was basically a cube with inside of

5  
00:00:20,790 --> 00:00:15,759  
sphere where the points of the cube

6  
00:00:33,990 --> 00:00:30,050  
[Music]

7  
00:00:35,510 --> 00:00:34,000  
[Applause]

8  
00:00:37,750 --> 00:00:35,520  
so this isn't anything that just is

9  
00:00:45,510 --> 00:00:37,760  
limited to the united states it's a

10  
00:00:49,750 --> 00:00:47,750  
billionaire john caldwell once said if

11  
00:00:52,069 --> 00:00:49,760  
i'm lucky i only get recruitment wrong

12  
00:00:53,990 --> 00:00:52,079  
seventy percent of the time but how is

13  
00:00:55,990 --> 00:00:54,000

it we accept being wrong so much at a

14

00:00:58,150 --> 00:00:56,000

time with the cost of finding the right

15

00:01:00,069 --> 00:00:58,160

match for both people and organizations

16

00:01:02,229 --> 00:01:00,079

so high it's imperative that you choose

17

00:01:04,229 --> 00:01:02,239

the right team to help you on that path

18

00:01:06,469 --> 00:01:04,239

recruitix is one of the fastest growing

19

00:01:08,789 --> 00:01:06,479

recruitment companies in the uk with an

20

00:01:10,710 --> 00:01:08,799

expert team of dedicated passionate high

21

00:01:12,469 --> 00:01:10,720

experienced professionals they are the

22

00:01:15,030 --> 00:01:12,479

perfect choice to make sure you get it

23

00:01:16,789 --> 00:01:15,040

right first time every time with a range

24

00:01:18,710 --> 00:01:16,799

of departments covering almost all

25

00:01:20,950 --> 00:01:18,720

sectors it doesn't matter if you need a

26  
00:01:22,630 --> 00:01:20,960  
highly specialized it professional a

27  
00:01:25,109 --> 00:01:22,640  
boots on the ground sales person

28  
00:01:27,429 --> 00:01:25,119  
accountant mechanical engineer or

29  
00:01:29,190 --> 00:01:27,439  
anything else they have the expert team

30  
00:01:31,030 --> 00:01:29,200  
in-house to ensure you find the

31  
00:01:32,789 --> 00:01:31,040  
resources you need as a friend of the

32  
00:01:35,190 --> 00:01:32,799  
podcast they will offer all new

33  
00:01:37,510 --> 00:01:35,200  
organizations wanting to give them a try

34  
00:01:40,069 --> 00:01:37,520  
heavily discounted fees to 10

35  
00:01:41,749 --> 00:01:40,079  
of per annum salary representing an

36  
00:01:43,789 --> 00:01:41,759  
enormous saving compared to the rest of

37  
00:01:47,030 --> 00:01:43,799  
the market just visit

38  
00:01:49,429 --> 00:01:47,040

recruitics.co.uk that's recruit ix dot

39

00:01:51,030 --> 00:01:49,439

co dot uk leave your details tell them

40

00:01:52,830 --> 00:01:51,040

the podcast sent you and one of their

41

00:01:55,590 --> 00:01:52,840

expert team will be in

42

00:01:57,830 --> 00:01:55,600

touch hi everyone and welcome back to

43

00:02:00,310 --> 00:01:57,840

that ufo podcast i'm delighted to say

44

00:02:02,630 --> 00:02:00,320

joining me on the podcast for another

45

00:02:05,109 --> 00:02:02,640

visit as head of the galileo project

46

00:02:07,830 --> 00:02:05,119

professor avi loeb well avi welcome back

47

00:02:09,510 --> 00:02:07,840

to the podcast thanks for having me

48

00:02:12,150 --> 00:02:09,520

delighted and listen there's so much to

49

00:02:14,790 --> 00:02:12,160

talk about we last spoke back in august

50

00:02:17,110 --> 00:02:14,800

2021 at the time you had secured the

51  
00:02:18,710 --> 00:02:17,120  
funding for the galileo project and we

52  
00:02:21,110 --> 00:02:18,720  
were discussing what those plans are

53  
00:02:23,270 --> 00:02:21,120  
going to be so much has happened since

54  
00:02:26,070 --> 00:02:23,280  
then uh i've recently just read your

55  
00:02:28,070 --> 00:02:26,080  
blog from march where you stated that

56  
00:02:29,589 --> 00:02:28,080  
the first telescope for the project

57  
00:02:31,589 --> 00:02:29,599  
would be built on the roof of the

58  
00:02:33,670 --> 00:02:31,599  
harvard college observatory

59  
00:02:35,270 --> 00:02:33,680  
what's the planned time scale for this

60  
00:02:37,270 --> 00:02:35,280  
and what can we expect from that

61  
00:02:38,949 --> 00:02:37,280  
telescope and piece of equipment once

62  
00:02:41,270 --> 00:02:38,959  
it's fully functional

63  
00:02:43,750 --> 00:02:41,280

well we ordered the instruments and we

64

00:02:45,990 --> 00:02:43,760

are planning to start in the middle of

65

00:02:48,470 --> 00:02:46,000

may or so once all the all of them are

66

00:02:49,830 --> 00:02:48,480

arrived to start putting them together

67

00:02:52,229 --> 00:02:49,840

because

68

00:02:53,990 --> 00:02:52,239

in difference from past reports about

69

00:02:55,830 --> 00:02:54,000

the unidentified objects in the

70

00:02:58,070 --> 00:02:55,840

atmosphere

71

00:02:59,910 --> 00:02:58,080

we want to be in full control over the

72

00:03:01,110 --> 00:02:59,920

instrumentation so it's no it will not

73

00:03:03,589 --> 00:03:01,120

be

74

00:03:06,630 --> 00:03:03,599

a camera in a jittery cockpit of a

75

00:03:08,949 --> 00:03:06,640

fighter jet and we we want to

76

00:03:10,630 --> 00:03:08,959

use the best equipment possible in the

77

00:03:13,670 --> 00:03:10,640

market right now

78

00:03:15,910 --> 00:03:13,680

uh and it it's different from military

79

00:03:16,949 --> 00:03:15,920

equipment of course because it doesn't

80

00:03:18,869 --> 00:03:16,959

need to

81

00:03:21,350 --> 00:03:18,879

survive in a battlefield

82

00:03:23,110 --> 00:03:21,360

and it could be of much higher fidelity

83

00:03:25,030 --> 00:03:23,120

um and

84

00:03:27,190 --> 00:03:25,040

so we ordered the instrumentation we

85

00:03:28,390 --> 00:03:27,200

want to put it together within a month

86

00:03:30,390 --> 00:03:28,400

on the roof of the harvard college

87

00:03:32,149 --> 00:03:30,400

observatory not because that site is

88

00:03:34,710 --> 00:03:32,159

particularly interesting in fact it's

89

00:03:36,949 --> 00:03:34,720

cloudy in cambridge massachusetts often

90

00:03:38,630 --> 00:03:36,959

but we just want to have it close to us

91

00:03:41,350 --> 00:03:38,640

so we can test

92

00:03:44,470 --> 00:03:41,360

the system and it will include

93

00:03:47,910 --> 00:03:47,030

detector that is made of

94

00:03:50,390 --> 00:03:47,920

eight

95

00:03:52,710 --> 00:03:50,400

cameras covering the entire sky in the

96

00:03:55,110 --> 00:03:52,720

infrared at all times so we are

97

00:03:57,509 --> 00:03:55,120

basically taking a video of the sky and

98

00:03:59,910 --> 00:03:57,519

the infrared offer offers the

99

00:04:03,270 --> 00:03:59,920

uh benefit that you can observe objects

100

00:04:05,110 --> 00:04:03,280

also at night even when the sun is out

101  
00:04:06,869 --> 00:04:05,120  
you don't need something to shine on the

102  
00:04:09,830 --> 00:04:06,879  
object if it's warm you can see it in

103  
00:04:11,350 --> 00:04:09,840  
the infrared and

104  
00:04:13,270 --> 00:04:11,360  
during the daytime of course you have

105  
00:04:15,030 --> 00:04:13,280  
the sun shining on objects and that

106  
00:04:18,229 --> 00:04:15,040  
makes it easier to detect so we have

107  
00:04:20,069 --> 00:04:18,239  
also a visible light camera that has a

108  
00:04:21,990 --> 00:04:20,079  
fisheye lens that looks at the entire

109  
00:04:24,550 --> 00:04:22,000  
sky again

110  
00:04:25,430 --> 00:04:24,560  
and in addition to those two there will

111  
00:04:27,350 --> 00:04:25,440  
be

112  
00:04:29,830 --> 00:04:27,360  
a radio

113  
00:04:30,790 --> 00:04:29,840

sensor that looks for reflected radio

114

00:04:32,070 --> 00:04:30,800

waves

115

00:04:33,990 --> 00:04:32,080

there is

116

00:04:35,909 --> 00:04:34,000

a transmission from radio stations

117

00:04:37,749 --> 00:04:35,919

everywhere and uh

118

00:04:40,469 --> 00:04:37,759

this is a passive system that looks for

119

00:04:43,350 --> 00:04:40,479

the reflection of radio waves from any

120

00:04:45,510 --> 00:04:43,360

object in the sky and then in addition

121

00:04:46,870 --> 00:04:45,520

there will be an audio system recording

122

00:04:49,030 --> 00:04:46,880

sound

123

00:04:51,270 --> 00:04:49,040

so we will get the full movie of the sky

124

00:04:53,030 --> 00:04:51,280

both the video and the audio

125

00:04:54,629 --> 00:04:53,040

in different colors

126

00:04:56,629 --> 00:04:54,639

uh and

127

00:04:58,469 --> 00:04:56,639

then there will be a computer system

128

00:05:00,550 --> 00:04:58,479

that analyzes the data and looks for

129

00:05:02,469 --> 00:05:00,560

objects of interest and of course that's

130

00:05:05,990 --> 00:05:02,479

the heart of the

131

00:05:10,070 --> 00:05:08,070

identifying the nature of the objects we

132

00:05:12,550 --> 00:05:10,080

see and there are two categories that

133

00:05:14,390 --> 00:05:12,560

are not of great interest but they will

134

00:05:17,350 --> 00:05:14,400

probably describe most of the objects we

135

00:05:18,550 --> 00:05:17,360

see one of them is natural objects like

136

00:05:21,590 --> 00:05:18,560

a bird

137

00:05:24,070 --> 00:05:21,600

lightning in the atmosphere a meteor you

138

00:05:24,950 --> 00:05:24,080

know things that come naturally

139

00:05:27,110 --> 00:05:24,960

and

140

00:05:30,469 --> 00:05:27,120

the second category is

141

00:05:32,790 --> 00:05:30,479

objects made by humans uh a drone

142

00:05:35,510 --> 00:05:32,800

an airplane a satellite

143

00:05:37,749 --> 00:05:35,520

and both of these categories are not of

144

00:05:39,830 --> 00:05:37,759

great interest to us of course a drone

145

00:05:41,830 --> 00:05:39,840

manufactured by another country is of

146

00:05:42,629 --> 00:05:41,840

interest to the intelligence agencies

147

00:05:45,350 --> 00:05:42,639

and

148

00:05:47,430 --> 00:05:45,360

a bird is of interest to a zoologist but

149

00:05:49,350 --> 00:05:47,440

we we don't really i mean we would like

150

00:05:51,430 --> 00:05:49,360

to recognize all of these

151  
00:05:54,230 --> 00:05:51,440  
but what we want to see is whether there

152  
00:05:56,710 --> 00:05:54,240  
is anything else out there and

153  
00:05:58,950 --> 00:05:56,720  
if we don't find anything else so be it

154  
00:06:00,469 --> 00:05:58,960  
we cleared up the fog you know we

155  
00:06:02,230 --> 00:06:00,479  
identified

156  
00:06:04,230 --> 00:06:02,240  
whatever is out there it's a fishing

157  
00:06:06,550 --> 00:06:04,240  
expedition so we don't assume anything

158  
00:06:08,790 --> 00:06:06,560  
we we approach it agnostically and you

159  
00:06:10,870 --> 00:06:08,800  
know science is about reproducible

160  
00:06:13,350 --> 00:06:10,880  
results so if there is anything in the

161  
00:06:15,110 --> 00:06:13,360  
sky that is unusual we should be able to

162  
00:06:17,430 --> 00:06:15,120  
find it we don't need to wait for the

163  
00:06:18,710 --> 00:06:17,440

government to declassify data that's the

164

00:06:21,430 --> 00:06:18,720

whole spirit

165

00:06:23,909 --> 00:06:21,440

once this system works and we hope that

166

00:06:25,990 --> 00:06:23,919

it will work by the end of the summer uh

167

00:06:28,230 --> 00:06:26,000

then we will make copies of it and

168

00:06:30,950 --> 00:06:28,240

distribute them in different locations

169

00:06:32,550 --> 00:06:30,960

and the number of copies depends on how

170

00:06:34,870 --> 00:06:32,560

much funding we have so currently we

171

00:06:36,950 --> 00:06:34,880

have two million dollars we could afford

172

00:06:39,830 --> 00:06:36,960

about five to ten

173

00:06:41,749 --> 00:06:39,840

copies uh what we really need is

174

00:06:43,749 --> 00:06:41,759

hundreds of copies so that we get very

175

00:06:44,469 --> 00:06:43,759

good statistics of all

176

00:06:53,270 --> 00:06:44,479

the

177

00:06:54,790 --> 00:06:53,280

for that we need a funding level of 100

178

00:06:57,029 --> 00:06:54,800

million dollars

179

00:06:58,390 --> 00:06:57,039

so my hope that is that once we

180

00:07:00,830 --> 00:06:58,400

demonstrate that we know what we are

181

00:07:01,990 --> 00:07:00,840

talking about we will get funding

182

00:07:04,469 --> 00:07:02,000

from uh

183

00:07:07,029 --> 00:07:04,479

wealthy individuals that are inspired by

184

00:07:08,710 --> 00:07:07,039

the goal of the project so

185

00:07:10,510 --> 00:07:08,720

we should see i mean on friday for

186

00:07:14,469 --> 00:07:10,520

example i'm

187

00:07:18,390 --> 00:07:14,479

participating in the concluding panel of

188

00:07:20,309 --> 00:07:18,400

bitcoin 2022 uh in miami florida and you

189

00:07:22,150 --> 00:07:20,319

know there would be a 15 000 people in

190

00:07:24,710 --> 00:07:22,160

the audience some of which

191

00:07:28,150 --> 00:07:24,720

are very wealthy and i hope they will be

192

00:07:30,629 --> 00:07:28,160

inspired um you never know

193

00:07:32,950 --> 00:07:30,639

i've got my ten dollars of bitcoin so if

194

00:07:35,350 --> 00:07:32,960

that ever increases exponentially then

195

00:07:37,270 --> 00:07:35,360

maybe i'll get investing as well

196

00:07:39,670 --> 00:07:37,280

listen avi just as we've had recalled

197

00:07:41,830 --> 00:07:39,680

the u.s space command confirmed to the

198

00:07:44,469 --> 00:07:41,840

nasa directorship that an interstellar

199

00:07:46,629 --> 00:07:44,479

meteor discovered by a student of yours

200

00:07:49,350 --> 00:07:46,639

and yourself amir siraj i think i'm

201  
00:07:51,830 --> 00:07:49,360  
saying the name correctly in 2019 is

202  
00:07:54,710 --> 00:07:51,840  
indeed of interstellar origin at the

203  
00:07:57,350 --> 00:07:54,720  
detection i believe happened in 2014

204  
00:07:59,830 --> 00:07:57,360  
which predates umura by more than three

205  
00:08:01,670 --> 00:07:59,840  
years so this object this meteor will

206  
00:08:04,070 --> 00:08:01,680  
now be recognized as the first

207  
00:08:05,670 --> 00:08:04,080  
interstellar object ever discovered can

208  
00:08:07,029 --> 00:08:05,680  
you tell us just a little bit about that

209  
00:08:08,710 --> 00:08:07,039  
and then i do have a question on the

210  
00:08:09,749 --> 00:08:08,720  
back of that as well as pertains to the

211  
00:08:11,510 --> 00:08:09,759  
equipment

212  
00:08:13,430 --> 00:08:11,520  
yeah so this

213  
00:08:15,510 --> 00:08:13,440

discovery is very exciting for a number

214

00:08:19,029 --> 00:08:15,520

of reasons first of all

215

00:08:22,150 --> 00:08:19,039

um i was uh invited to an interview in

216

00:08:24,869 --> 00:08:22,160

march 2019 uh about

217

00:08:29,029 --> 00:08:24,879

a meteor that

218

00:08:31,270 --> 00:08:29,039

was uh recognized um around that time a

219

00:08:32,469 --> 00:08:31,280

few months earlier that was quite

220

00:08:34,630 --> 00:08:32,479

powerful and

221

00:08:36,709 --> 00:08:34,640

i read a little about it before the

222

00:08:37,909 --> 00:08:36,719

interview so that i'll be knowledgeable

223

00:08:40,630 --> 00:08:37,919

and then

224

00:08:42,310 --> 00:08:40,640

uh while reading background on meteors i

225

00:08:44,630 --> 00:08:42,320

realized well there is actually a

226

00:08:47,350 --> 00:08:44,640

catalog of meteors

227

00:08:49,750 --> 00:08:47,360

that the us government has data on and

228

00:08:51,430 --> 00:08:49,760

uh so then i approached my student and i

229

00:08:55,030 --> 00:08:51,440

said look why don't you check this

230

00:08:57,350 --> 00:08:55,040

catalog and see if any of the velocities

231

00:08:59,990 --> 00:08:57,360

reporter reported for these meteors

232

00:09:02,470 --> 00:09:00,000

measured by the us government

233

00:09:04,230 --> 00:09:02,480

indicate that any of these objects came

234

00:09:06,710 --> 00:09:04,240

from outside the solar system because if

235

00:09:08,710 --> 00:09:06,720

they move very fast relative to earth

236

00:09:11,110 --> 00:09:08,720

you know they might have originated from

237

00:09:13,030 --> 00:09:11,120

far away and so

238

00:09:14,870 --> 00:09:13,040

um he uh

239

00:09:17,350 --> 00:09:14,880

his name is amir siraj he's an

240

00:09:19,110 --> 00:09:17,360

undergraduate at harvard college and so

241

00:09:21,829 --> 00:09:19,120

he went to the catalogue and looked at

242

00:09:22,949 --> 00:09:21,839

the fastest object reported relative to

243

00:09:25,110 --> 00:09:22,959

earth and

244

00:09:26,870 --> 00:09:25,120

turned out that this object was on a

245

00:09:28,550 --> 00:09:26,880

head-on collision the earth moves in

246

00:09:30,710 --> 00:09:28,560

some direction and this object came

247

00:09:32,230 --> 00:09:30,720

exactly from the opposite direction

248

00:09:35,590 --> 00:09:32,240

so it's not

249

00:09:37,590 --> 00:09:35,600

it's not necessarily unbound to the sun

250

00:09:39,430 --> 00:09:37,600

it's probably bound to the sun it didn't

251  
00:09:40,949 --> 00:09:39,440  
come from outside the source so then he

252  
00:09:43,110 --> 00:09:40,959  
went to the second

253  
00:09:45,350 --> 00:09:43,120  
object in the list and he found that

254  
00:09:48,870 --> 00:09:45,360  
this object actually

255  
00:09:51,430 --> 00:09:48,880  
uh had a speed of 40 kilometers per

256  
00:09:52,230 --> 00:09:51,440  
second outside the solar system if you

257  
00:09:54,710 --> 00:09:52,240  
uh

258  
00:09:56,389 --> 00:09:54,720  
subtract off the the motion of the earth

259  
00:09:59,350 --> 00:09:56,399  
and then uh

260  
00:10:01,829 --> 00:09:59,360  
calculate its own motion

261  
00:10:04,069 --> 00:10:01,839  
relative to the sun and and and go back

262  
00:10:06,550 --> 00:10:04,079  
in time you you realize that he actually

263  
00:10:08,790 --> 00:10:06,560

was very fast even outside the solar

264

00:10:11,030 --> 00:10:08,800

system so that was

265

00:10:13,110 --> 00:10:11,040

very exciting because it indicated that

266

00:10:16,710 --> 00:10:13,120

this object is

267

00:10:18,949 --> 00:10:16,720

interstellar so we wrote a

268

00:10:22,949 --> 00:10:18,959

scientific paper about it saying well

269

00:10:27,910 --> 00:10:22,959

this object was discovered uh on january

270

00:10:32,630 --> 00:10:27,920

8th 2014 at the five in the afternoon um

271

00:10:34,550 --> 00:10:32,640

and it's uh 3.75 years before um

272

00:10:35,910 --> 00:10:34,560

and it was found

273

00:10:38,790 --> 00:10:35,920

north of

274

00:10:40,310 --> 00:10:38,800

manus island off the coast of papua new

275

00:10:41,190 --> 00:10:40,320

guinea

276

00:10:42,150 --> 00:10:41,200

and

277

00:10:44,230 --> 00:10:42,160

we

278

00:10:46,389 --> 00:10:44,240

you know described the calculation and

279

00:10:47,910 --> 00:10:46,399

argued that it's the first interstellar

280

00:10:50,389 --> 00:10:47,920

object that

281

00:10:52,069 --> 00:10:50,399

was detected on earth and it was just

282

00:10:55,750 --> 00:10:52,079

missed even though it was in this

283

00:11:00,470 --> 00:10:58,150

wrote a paper saying this is an interest

284

00:11:04,150 --> 00:11:00,480

of interstellar origin so we submitted

285

00:11:05,190 --> 00:11:04,160

the paper in 2019 uh march 2018 after my

286

00:11:07,829 --> 00:11:05,200

interview and

287

00:11:09,350 --> 00:11:07,839

uh within a few days from that and uh

288

00:11:11,509 --> 00:11:09,360

submitted it to the astrophysical

289

00:11:12,870 --> 00:11:11,519

journal and then we got a referee report

290

00:11:14,310 --> 00:11:12,880

back saying

291

00:11:17,590 --> 00:11:14,320

you know in that catalogue of the

292

00:11:19,430 --> 00:11:17,600

government there are no error bars

293

00:11:21,910 --> 00:11:19,440

we don't trust the government

294

00:11:23,509 --> 00:11:21,920

it's most likely this object

295

00:11:24,790 --> 00:11:23,519

has large uncertainties in the

296

00:11:27,190 --> 00:11:24,800

measurement

297

00:11:29,030 --> 00:11:27,200

and i thought to myself

298

00:11:31,509 --> 00:11:29,040

that makes no sense because the us

299

00:11:33,910 --> 00:11:31,519

government is after ballistic missiles

300

00:11:36,949 --> 00:11:33,920

right and they need to know whether they

301  
00:11:38,630 --> 00:11:36,959  
land on boston or new york they need

302  
00:11:40,389 --> 00:11:38,640  
very high precision so if you are

303  
00:11:42,069 --> 00:11:40,399  
telling me that the euro budget should

304  
00:11:44,069 --> 00:11:42,079  
be huge

305  
00:11:45,430 --> 00:11:44,079  
at a level that would make this object

306  
00:11:46,470 --> 00:11:45,440  
bound to the sun that means the

307  
00:11:48,230 --> 00:11:46,480  
government doesn't know what they're

308  
00:11:49,910 --> 00:11:48,240  
doing they can't really predict what

309  
00:11:50,870 --> 00:11:49,920  
ballistic missiles

310  
00:11:53,670 --> 00:11:50,880  
uh

311  
00:11:55,269 --> 00:11:53,680  
are you know which target that they're

312  
00:11:57,190 --> 00:11:55,279  
moving towards and

313  
00:11:59,750 --> 00:11:57,200

i i cannot believe that you know that

314

00:12:01,829 --> 00:11:59,760

doesn't make sense so so we actually at

315

00:12:03,269 --> 00:12:01,839

the time i was sharing the board on

316

00:12:05,910 --> 00:12:03,279

physics and astronomy of the national

317

00:12:07,829 --> 00:12:05,920

academies and one of the members there

318

00:12:10,150 --> 00:12:07,839

was from los alamos so

319

00:12:12,310 --> 00:12:10,160

uh behind the fence of national security

320

00:12:14,230 --> 00:12:12,320

so i approached him and said

321

00:12:16,790 --> 00:12:14,240

could you please give us assurance that

322

00:12:18,550 --> 00:12:16,800

the error budget is indeed small

323

00:12:21,350 --> 00:12:18,560

so that this object is definitely of

324

00:12:22,629 --> 00:12:21,360

interstellar origin and he went back and

325

00:12:25,910 --> 00:12:22,639

discussed it

326

00:12:28,230 --> 00:12:25,920

uh and then we got an email saying yes

327

00:12:29,990 --> 00:12:28,240

we can assure you that it's interesting

328

00:12:32,069 --> 00:12:30,000

so then we went back to the referee of

329

00:12:34,069 --> 00:12:32,079

the astrophysical journal and said look

330

00:12:36,310 --> 00:12:34,079

we got this assurance uh you should

331

00:12:39,670 --> 00:12:36,320

accept the paper for publication and the

332

00:12:41,269 --> 00:12:39,680

referee said no i don't believe

333

00:12:44,230 --> 00:12:41,279

the us government this is not a public

334

00:12:46,790 --> 00:12:44,240

announcement the paper is rejected

335

00:12:49,110 --> 00:12:46,800

and you can ask yourself why

336

00:12:53,030 --> 00:12:49,120

was this referee or referees there were

337

00:12:55,190 --> 00:12:53,040

several of them so hostile my answer is

338

00:12:57,750 --> 00:12:55,200

because they're quote unquote experts

339

00:13:00,310 --> 00:12:57,760

they worked in this field for decades

340

00:13:02,550 --> 00:13:00,320

they do not like the idea that someone

341

00:13:04,310 --> 00:13:02,560

else that is new to their field makes a

342

00:13:07,430 --> 00:13:04,320

discovery so they would try to find any

343

00:13:09,110 --> 00:13:07,440

reason to dispute that discovery even if

344

00:13:11,190 --> 00:13:09,120

it says the us government doesn't know

345

00:13:12,310 --> 00:13:11,200

what they're doing

346

00:13:14,710 --> 00:13:12,320

so

347

00:13:16,790 --> 00:13:14,720

the paper was rejected

348

00:13:17,670 --> 00:13:16,800

and you know just

349

00:13:20,949 --> 00:13:17,680

uh

350

00:13:22,870 --> 00:13:20,959

set on on our desk for three years now

351

00:13:26,790 --> 00:13:22,880

so in the meantime

352

00:13:28,629 --> 00:13:26,800

uh we of course informed people uh that

353

00:13:30,550 --> 00:13:28,639

assured us that this is interstellar and

354

00:13:33,430 --> 00:13:30,560

said look we need a more

355

00:13:35,990 --> 00:13:33,440

uh official announcement

356

00:13:38,069 --> 00:13:36,000

and gladly after three years you can see

357

00:13:40,230 --> 00:13:38,079

how long it takes to declassify error

358

00:13:42,870 --> 00:13:40,240

bars they didn't actually declassify the

359

00:13:44,150 --> 00:13:42,880

error bar they just made a public

360

00:13:46,310 --> 00:13:44,160

announcement

361

00:13:49,189 --> 00:13:46,320

from the department of defense the

362

00:13:51,189 --> 00:13:49,199

united states space command

363

00:13:52,710 --> 00:13:51,199

and the the letter is available for

364

00:13:55,430 --> 00:13:52,720

anyone to see

365

00:13:58,310 --> 00:13:55,440

it was sent to the directorate of

366

00:14:00,949 --> 00:13:58,320

of nasa under the leadership of thomas

367

00:14:02,870 --> 00:14:00,959

zurbuchen who is responsible for all the

368

00:14:05,910 --> 00:14:02,880

science done at nasa

369

00:14:07,189 --> 00:14:05,920

and in that letter they explicitly say

370

00:14:08,550 --> 00:14:07,199

that

371

00:14:15,269 --> 00:14:08,560

the

372

00:14:17,990 --> 00:14:15,279

amir siraj and myself

373

00:14:20,389 --> 00:14:18,000

is indeed a discovery of an object from

374

00:14:26,550 --> 00:14:20,399

an interstellar origin

375

00:14:30,310 --> 00:14:28,069

confidence

376

00:14:32,790 --> 00:14:30,320  
99.999

377

00:14:36,069 --> 00:14:32,800  
so i ask you

378

00:14:37,829 --> 00:14:36,079  
why would their free disbelieve

379

00:14:40,069 --> 00:14:37,839  
the original report

380

00:14:43,509 --> 00:14:40,079  
and the original email we had when the

381

00:14:45,829 --> 00:14:43,519  
government is at the 99.999

382

00:14:47,430 --> 00:14:45,839  
confident and obviously they would be

383

00:14:49,189 --> 00:14:47,440  
because they have to know what they are

384

00:14:50,790 --> 00:14:49,199  
doing in terms of monitoring the motion

385

00:14:54,470 --> 00:14:50,800  
of objects

386

00:14:57,430 --> 00:14:54,480  
you know in the sky right yeah so anyway

387

00:14:59,030 --> 00:14:57,440  
this is the bottom line as of today this

388

00:15:01,350 --> 00:14:59,040

letter was released

389

00:15:05,189 --> 00:15:01,360

and now we know there was an

390

00:15:08,389 --> 00:15:05,199

interstellar uh object discovered before

391

00:15:10,870 --> 00:15:08,399

omua okay that's point number one

392

00:15:13,670 --> 00:15:10,880

the second point uh that it is

393

00:15:16,470 --> 00:15:13,680

significant is because this is a meteor

394

00:15:18,310 --> 00:15:16,480

what that means is it came it collided

395

00:15:22,069 --> 00:15:18,320

with the earth okay

396

00:15:23,910 --> 00:15:22,079

so um of course it burned in

397

00:15:25,750 --> 00:15:23,920

in the atmosphere and there was a

398

00:15:27,910 --> 00:15:25,760

fireball and that's how

399

00:15:29,110 --> 00:15:27,920

it was detected from the fireball from

400

00:15:31,030 --> 00:15:29,120

the heat

401  
00:15:31,910 --> 00:15:31,040  
as a result of it rubbing against the

402  
00:15:33,030 --> 00:15:31,920  
air

403  
00:15:35,269 --> 00:15:33,040  
but

404  
00:15:37,509 --> 00:15:35,279  
something you know some relic

405  
00:15:39,350 --> 00:15:37,519  
of it may have landed

406  
00:15:42,230 --> 00:15:39,360  
in the ocean

407  
00:15:44,150 --> 00:15:42,240  
so we can put our hands on it

408  
00:15:46,629 --> 00:15:44,160  
so there are two possibilities either

409  
00:15:49,110 --> 00:15:46,639  
this interstellar object

410  
00:15:51,350 --> 00:15:49,120  
is natural you know like people

411  
00:15:53,829 --> 00:15:51,360  
suggested about a moa maybe it's a

412  
00:15:56,230 --> 00:15:53,839  
nitrogen iceberg maybe it's a hydrogen

413  
00:15:58,069 --> 00:15:56,240

iceberg you know maybe it's a dust bun

414

00:16:00,150 --> 00:15:58,079

well clearly this one is not a dust

415

00:16:02,550 --> 00:16:00,160

bunny because a dust bunny would not

416

00:16:04,790 --> 00:16:02,560

burn up like a meteor

417

00:16:07,189 --> 00:16:04,800

okay so here is an interstellar object

418

00:16:09,430 --> 00:16:07,199

that is not a dust bunny

419

00:16:12,310 --> 00:16:09,440

and you know if any piece of it landed

420

00:16:16,230 --> 00:16:12,320

in the ocean we can put our hands on it

421

00:16:18,550 --> 00:16:16,240

which we cannot do with respect to muah

422

00:16:20,710 --> 00:16:18,560

so that's the second reason why it's

423

00:16:22,870 --> 00:16:20,720

interesting and i suggest you know let's

424

00:16:24,389 --> 00:16:22,880

go and search for it

425

00:16:26,069 --> 00:16:24,399

it's very exciting and it got me

426  
00:16:27,670 --> 00:16:26,079  
thinking that

427  
00:16:29,269 --> 00:16:27,680  
with the equipment that you're trying to

428  
00:16:30,870 --> 00:16:29,279  
get let's talk about that first

429  
00:16:33,430 --> 00:16:30,880  
telescope that's going to be on the roof

430  
00:16:35,350 --> 00:16:33,440  
of the harvard college observatory what

431  
00:16:37,350 --> 00:16:35,360  
sort of time scales will it take from

432  
00:16:40,470 --> 00:16:37,360  
the telescope picking up an object of

433  
00:16:43,030 --> 00:16:40,480  
interest like like that meteor it being

434  
00:16:45,110 --> 00:16:43,040  
tracked and observed by your team to

435  
00:16:47,269 --> 00:16:45,120  
your team having sufficient data to

436  
00:16:49,910 --> 00:16:47,279  
decide on a course of action are we

437  
00:16:51,670 --> 00:16:49,920  
talking minutes hours days or

438  
00:16:54,870 --> 00:16:51,680

potentially longer

439

00:16:57,110 --> 00:16:54,880

oh if we do detect a meteor then

440

00:16:57,990 --> 00:16:57,120

we immediately know that right and and

441

00:17:00,230 --> 00:16:58,000

then

442

00:17:02,470 --> 00:17:00,240

meteors are

443

00:17:05,909 --> 00:17:02,480

reported as as soon as they're

444

00:17:07,350 --> 00:17:05,919

discovered but you need to cover a a

445

00:17:09,270 --> 00:17:07,360

significant

446

00:17:11,909 --> 00:17:09,280

chunk of the sky to see one of them

447

00:17:13,590 --> 00:17:11,919

because they're rare and then let's say

448

00:17:14,949 --> 00:17:13,600

not a meteor that's something more

449

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

anomalous

450

00:17:19,510 --> 00:17:17,760

you're picking and detecting yet so so

451  
00:17:21,510 --> 00:17:19,520  
the only i mean we will know immediately

452  
00:17:23,750 --> 00:17:21,520  
if there is something unusual

453  
00:17:25,990 --> 00:17:23,760  
um the question is how quickly will we

454  
00:17:28,549 --> 00:17:26,000  
release the data we need to go through a

455  
00:17:29,590 --> 00:17:28,559  
procedure where we check that you know

456  
00:17:33,510 --> 00:17:29,600  
it's not

457  
00:17:35,430 --> 00:17:33,520  
illusion of the instruments that we

458  
00:17:37,350 --> 00:17:35,440  
trust the data and that it's not

459  
00:17:39,029 --> 00:17:37,360  
something natural you know like

460  
00:17:42,150 --> 00:17:39,039  
something that is not of great interest

461  
00:17:43,430 --> 00:17:42,160  
and it's not a drone not the human made

462  
00:17:45,990 --> 00:17:43,440  
that may take

463  
00:17:47,190 --> 00:17:46,000

some weeks or or at most a few months

464

00:17:49,110 --> 00:17:47,200

you know and

465

00:17:51,110 --> 00:17:49,120

but eventually we'll release the data so

466

00:17:53,909 --> 00:17:51,120

the only issue is really for us to be

467

00:17:56,310 --> 00:17:53,919

sure not to cry wolf

468

00:17:58,549 --> 00:17:56,320

you know unjustifiably because then we

469

00:18:01,029 --> 00:17:58,559

lose credibility if we off if we keep

470

00:18:02,470 --> 00:18:01,039

announcing things that are not real then

471

00:18:04,630 --> 00:18:02,480

you know people will not believe us

472

00:18:06,310 --> 00:18:04,640

anymore so we just need to be careful

473

00:18:09,350 --> 00:18:06,320

that what we are seeing is

474

00:18:10,789 --> 00:18:09,360

a real object that it behaves in ways

475

00:18:14,150 --> 00:18:10,799

that cannot be

476

00:18:15,909 --> 00:18:14,160  
described as natural objects or

477

00:18:18,230 --> 00:18:15,919  
human-made objects

478

00:18:20,470 --> 00:18:18,240  
and of course once we verify that we'll

479

00:18:22,870 --> 00:18:20,480  
be delighted to share it to share the

480

00:18:24,710 --> 00:18:22,880  
data with everyone

481

00:18:26,870 --> 00:18:24,720  
what steps have you put in place to

482

00:18:28,710 --> 00:18:26,880  
future proof the technology that

483

00:18:31,110 --> 00:18:28,720  
obviously we're you're still to build

484

00:18:33,350 --> 00:18:31,120  
your first telescope but as our own

485

00:18:34,950 --> 00:18:33,360  
technology advances i presume there's

486

00:18:36,710 --> 00:18:34,960  
going to be scope for you to upgrade

487

00:18:38,230 --> 00:18:36,720  
equipment down the line do you have a

488

00:18:41,190 --> 00:18:38,240

succession plan of what you would look

489

00:18:43,590 --> 00:18:41,200

to upgrade first yeah we have multiple

490

00:18:45,350 --> 00:18:43,600

phases that we are thinking about and of

491

00:18:48,230 --> 00:18:45,360

course funding is really important

492

00:18:50,470 --> 00:18:48,240

because if we do get funded at least 10

493

00:18:52,230 --> 00:18:50,480

times more than we have right now then

494

00:18:54,310 --> 00:18:52,240

instead of using a 10 centimeter

495

00:18:57,669 --> 00:18:54,320

aperture for the telescope that

496

00:19:00,789 --> 00:18:57,679

barely resolves um you know features

497

00:19:03,110 --> 00:19:00,799

of about half a meter on

498

00:19:05,029 --> 00:19:03,120

an object at a distance of 10 kilometers

499

00:19:07,190 --> 00:19:05,039

you know we might be able to do much

500

00:19:09,909 --> 00:19:07,200

better with a half a meter telescope or

501  
00:19:12,630 --> 00:19:09,919  
a meter size telescope

502  
00:19:14,390 --> 00:19:12,640  
and but that costs much more money like

503  
00:19:16,870 --> 00:19:14,400  
a meter size

504  
00:19:17,830 --> 00:19:16,880  
telescope costs half a million dollars

505  
00:19:20,310 --> 00:19:17,840  
so

506  
00:19:22,150 --> 00:19:20,320  
right now we focus on on telescopes that

507  
00:19:24,230 --> 00:19:22,160  
are of the order of

508  
00:19:27,029 --> 00:19:24,240  
the size of the palm of your hand you

509  
00:19:27,990 --> 00:19:27,039  
know like of all the 10 centimeters uh

510  
00:19:29,909 --> 00:19:28,000  
but

511  
00:19:32,549 --> 00:19:29,919  
if we had more funding we would go for

512  
00:19:34,070 --> 00:19:32,559  
bigger ones and bigger apertures and

513  
00:19:36,470 --> 00:19:34,080

that would allow us to have better

514

00:19:40,310 --> 00:19:36,480

resolution crispier images

515

00:19:42,630 --> 00:19:40,320

um and also um we could afford many more

516

00:19:45,110 --> 00:19:42,640

uh eyes looking at the sky many more

517

00:19:47,510 --> 00:19:45,120

telescopes looking at the sky so

518

00:19:49,510 --> 00:19:47,520

it's all a question of funding uh our

519

00:19:51,270 --> 00:19:49,520

estimate is that with a hundred million

520

00:19:54,950 --> 00:19:51,280

dollars we should be able to do the job

521

00:19:57,029 --> 00:19:54,960

very well and that's really my goal to

522

00:19:58,549 --> 00:19:57,039

inspire people that

523

00:20:00,549 --> 00:19:58,559

can afford

524

00:20:02,789 --> 00:20:00,559

funding the project and you know it's

525

00:20:05,350 --> 00:20:02,799

not a lot of money when you consider

526

00:20:08,149 --> 00:20:05,360

scientific projects this is sort of

527

00:20:10,710 --> 00:20:08,159

mid-size

528

00:20:12,789 --> 00:20:10,720

or even small project

529

00:20:14,630 --> 00:20:12,799

relative to the big ones the big the

530

00:20:16,149 --> 00:20:14,640

biggest projects like the james webb

531

00:20:18,070 --> 00:20:16,159

space telescope or

532

00:20:19,990 --> 00:20:18,080

the large hadron collider they are a

533

00:20:21,669 --> 00:20:20,000

hundred times more expensive there are

534

00:20:23,830 --> 00:20:21,679

10 billion dollars here we're talking

535

00:20:26,710 --> 00:20:23,840

about one percent of that budget to

536

00:20:29,430 --> 00:20:26,720

accomplish everything we want so it's

537

00:20:32,149 --> 00:20:29,440

it's really not a lot

538

00:20:33,990 --> 00:20:32,159

the field of ufology ufos is very much

539

00:20:36,230 --> 00:20:34,000

still in its infancy and changing all

540

00:20:37,909 --> 00:20:36,240

the time

541

00:20:40,149 --> 00:20:37,919

it can be hard to speak to people who

542

00:20:42,149 --> 00:20:40,159

are are so science and data driven

543

00:20:44,710 --> 00:20:42,159

because it's difficult to not go into

544

00:20:47,190 --> 00:20:44,720

the speculative side of the subject

545

00:20:49,430 --> 00:20:47,200

however if you'll if you'll allow me for

546

00:20:52,070 --> 00:20:49,440

one moment many people would claim that

547

00:20:54,310 --> 00:20:52,080

the craft or uaps are potentially using

548

00:20:55,909 --> 00:20:54,320

anti-gravity technology that's something

549

00:20:57,510 --> 00:20:55,919

that's quite common would it be

550

00:20:59,510 --> 00:20:57,520

pertinent for people like yourself in

551  
00:21:02,310 --> 00:20:59,520  
the galileo project to look for

552  
00:21:04,230 --> 00:21:02,320  
signatures like gravitational waves and

553  
00:21:07,190 --> 00:21:04,240  
could you potentially track these using

554  
00:21:09,669 --> 00:21:07,200  
ligo or other laser interferometers

555  
00:21:10,549 --> 00:21:09,679  
okay so let me first say what is known

556  
00:21:12,870 --> 00:21:10,559  
uh

557  
00:21:13,909 --> 00:21:12,880  
in terms of the current science that we

558  
00:21:15,510 --> 00:21:13,919  
know about

559  
00:21:17,110 --> 00:21:15,520  
first of all

560  
00:21:20,070 --> 00:21:17,120  
according to einstein's theory of

561  
00:21:22,070 --> 00:21:20,080  
gravity you can get

562  
00:21:24,070 --> 00:21:22,080  
repulsive gravity

563  
00:21:26,549 --> 00:21:24,080

and in fact

564

00:21:28,230 --> 00:21:26,559

you get it when the vacuum

565

00:21:31,270 --> 00:21:28,240

you know the vacuum is what what you

566

00:21:33,990 --> 00:21:31,280

have when you remove all the matter so

567

00:21:36,230 --> 00:21:34,000

when the vacuum itself has some mass

568

00:21:37,669 --> 00:21:36,240

density mass per unit volume or energy

569

00:21:39,990 --> 00:21:37,679

per unit volume

570

00:21:42,070 --> 00:21:40,000

it you can show that that in in the

571

00:21:42,950 --> 00:21:42,080

context of einstein's theory of gravity

572

00:21:46,390 --> 00:21:42,960

that

573

00:21:47,990 --> 00:21:46,400

gives you a repulsive force and actually

574

00:21:50,390 --> 00:21:48,000

we observe it

575

00:21:53,029 --> 00:21:50,400

so einstein thought well it's a mistake

576  
00:21:53,909 --> 00:21:53,039  
of my theory that uh you know it gives

577  
00:21:56,070 --> 00:21:53,919  
this

578  
00:21:57,669 --> 00:21:56,080  
so-called cosmological constant you know

579  
00:22:00,549 --> 00:21:57,679  
that has to do with the energy of the

580  
00:22:03,029 --> 00:22:00,559  
vacuum uh he thought oh i should get rid

581  
00:22:04,870 --> 00:22:03,039  
of it because otherwise you know

582  
00:22:06,950 --> 00:22:04,880  
you know he was thinking about it just

583  
00:22:08,310 --> 00:22:06,960  
to balance the expansion of the universe

584  
00:22:10,470 --> 00:22:08,320  
at the time he thought the universe

585  
00:22:13,750 --> 00:22:10,480  
doesn't expand so he thought having a

586  
00:22:17,110 --> 00:22:13,760  
repulsive force of gravity balancing the

587  
00:22:19,110 --> 00:22:17,120  
attractive force of matter would make

588  
00:22:20,870 --> 00:22:19,120

the universe static

589

00:22:22,950 --> 00:22:20,880

not expanding if you have a perfect

590

00:22:24,470 --> 00:22:22,960

balance between the two forces

591

00:22:27,029 --> 00:22:24,480

but then he realized he was wrong

592

00:22:29,909 --> 00:22:27,039

because edwin hubble

593

00:22:32,230 --> 00:22:29,919

argued the universe is expanding and and

594

00:22:33,750 --> 00:22:32,240

einstein said oh that was a mistake i

595

00:22:35,909 --> 00:22:33,760

shouldn't have thought about this

596

00:22:37,830 --> 00:22:35,919

repulsive gravity but it turns out that

597

00:22:39,750 --> 00:22:37,840

it exists and in fact even though the

598

00:22:42,070 --> 00:22:39,760

universe is expanding

599

00:22:43,750 --> 00:22:42,080

its expansion is accelerating um

600

00:22:44,950 --> 00:22:43,760

recently and

601  
00:22:47,430 --> 00:22:44,960  
that means that there is something

602  
00:22:49,909 --> 00:22:47,440  
pushing galaxies apart

603  
00:22:52,230 --> 00:22:49,919  
uh a repulsive gravitational force which

604  
00:22:54,630 --> 00:22:52,240  
is believed to be a result of this

605  
00:22:57,909 --> 00:22:54,640  
cosmological constant the vacuum energy

606  
00:23:00,070 --> 00:22:57,919  
density and so it exists we know of that

607  
00:23:01,430 --> 00:23:00,080  
uh what is the nature of the vacuum

608  
00:23:03,270 --> 00:23:01,440  
energy that is

609  
00:23:05,350 --> 00:23:03,280  
causing this expansion

610  
00:23:07,190 --> 00:23:05,360  
you know where does it come from from a

611  
00:23:09,990 --> 00:23:07,200  
fundamental physics point of view we

612  
00:23:12,070 --> 00:23:10,000  
don't really understand that okay but

613  
00:23:13,430 --> 00:23:12,080

the existence of a repulsive gravity

614

00:23:15,750 --> 00:23:13,440

anti-gravity

615

00:23:18,390 --> 00:23:15,760

is known to to be real because that the

616

00:23:20,390 --> 00:23:18,400

nobel prize was awarded for that and

617

00:23:22,470 --> 00:23:20,400

for the discovery of the accelerated

618

00:23:23,990 --> 00:23:22,480

expansion of the universe

619

00:23:25,590 --> 00:23:24,000

so the universe is not only expanding

620

00:23:28,070 --> 00:23:25,600

it's expanding with a speed that is

621

00:23:30,549 --> 00:23:28,080

increasing over time as if something is

622

00:23:31,669 --> 00:23:30,559

pushing everything apart and that

623

00:23:33,590 --> 00:23:31,679

happens

624

00:23:36,789 --> 00:23:33,600

only in recent

625

00:23:39,350 --> 00:23:36,799

history if you go back in time at early

626  
00:23:41,430 --> 00:23:39,360  
on the density of meta was so large much

627  
00:23:43,830 --> 00:23:41,440  
larger than the density of the vacuum

628  
00:23:46,149 --> 00:23:43,840  
the matter the matter density dominated

629  
00:23:48,470 --> 00:23:46,159  
the the radiation density dominated and

630  
00:23:50,310 --> 00:23:48,480  
at that point gravity was attractive so

631  
00:23:51,590 --> 00:23:50,320  
it's only a recent phenomena over the

632  
00:23:53,830 --> 00:23:51,600  
past

633  
00:23:56,390 --> 00:23:53,840  
half of the age of the universe that

634  
00:23:58,870 --> 00:23:56,400  
matter and radiation were diluted enough

635  
00:24:01,350 --> 00:23:58,880  
for the vacuum to take over and dominate

636  
00:24:04,149 --> 00:24:01,360  
and and show this accelerated expansion

637  
00:24:04,950 --> 00:24:04,159  
before that it wasn't really important

638  
00:24:06,789 --> 00:24:04,960

uh

639

00:24:07,750 --> 00:24:06,799

except maybe very early on in the

640

00:24:10,390 --> 00:24:07,760

universe

641

00:24:12,390 --> 00:24:10,400

okay so that's what we know now

642

00:24:16,149 --> 00:24:12,400

uh that doesn't mean that we can

643

00:24:19,110 --> 00:24:16,159

manipulate the vacuum and sort of uh

644

00:24:21,029 --> 00:24:19,120

engineer it to propel things

645

00:24:23,029 --> 00:24:21,039

uh based on what we know we don't know

646

00:24:24,390 --> 00:24:23,039

how to do that let's put it that way we

647

00:24:27,830 --> 00:24:24,400

don't know how to

648

00:24:30,710 --> 00:24:27,840

sort of excavate the vacuum and and and

649

00:24:32,950 --> 00:24:30,720

you know use it for propulsion uh but

650

00:24:33,909 --> 00:24:32,960

that doesn't mean that it cannot be done

651  
00:24:36,950 --> 00:24:33,919  
i mean

652  
00:24:39,830 --> 00:24:36,960  
perhaps um a more advanced scientific

653  
00:24:41,990 --> 00:24:39,840  
civilization would be able to do that so

654  
00:24:44,549 --> 00:24:42,000  
i wouldn't rule it out it's just that we

655  
00:24:47,669 --> 00:24:44,559  
don't have any idea of how to do that

656  
00:24:50,310 --> 00:24:47,679  
how to you know propel something using

657  
00:24:52,710 --> 00:24:50,320  
the vacuum we don't know how to do that

658  
00:24:55,029 --> 00:24:52,720  
um and then the other thing i would say

659  
00:24:56,470 --> 00:24:55,039  
is gravitational waves are really

660  
00:24:57,750 --> 00:24:56,480  
difficult to

661  
00:25:04,390 --> 00:24:57,760  
excite

662  
00:25:07,029 --> 00:25:04,400  
you know in order to produce a

663  
00:25:09,430 --> 00:25:07,039

meaningful level of a gravitational wave

664

00:25:11,669 --> 00:25:09,440

so that we can detect it with a

665

00:25:13,990 --> 00:25:11,679

an observatory like ligo

666

00:25:15,029 --> 00:25:14,000

or or the future observatories that we

667

00:25:18,549 --> 00:25:15,039

will build

668

00:25:21,269 --> 00:25:18,559

um what you read is what you need is a

669

00:25:21,990 --> 00:25:21,279

a very high concentration of of mass

670

00:25:24,789 --> 00:25:22,000

like

671

00:25:27,029 --> 00:25:24,799

you get uh in a black hole

672

00:25:29,909 --> 00:25:27,039

but the point is if you have that

673

00:25:31,350 --> 00:25:29,919

concentration of mass just the newtonian

674

00:25:33,350 --> 00:25:31,360

effect forget about gravity

675

00:25:35,590 --> 00:25:33,360

gravitational waves just the fact that

676

00:25:37,430 --> 00:25:35,600

you have this mass that is

677

00:25:39,909 --> 00:25:37,440

you know a very large mass in order to

678

00:25:40,950 --> 00:25:39,919

generate strong waves that mass by

679

00:25:43,510 --> 00:25:40,960

itself

680

00:25:45,830 --> 00:25:43,520

acts on anything on earth

681

00:25:48,630 --> 00:25:45,840

using you know based on newton's law of

682

00:25:52,549 --> 00:25:48,640

gravity okay so just like the sun acts

683

00:25:53,909 --> 00:25:52,559

on us or jupiter acts on us so

684

00:25:55,590 --> 00:25:53,919

before you even worry about

685

00:25:57,669 --> 00:25:55,600

gravitational waves there would be this

686

00:25:59,430 --> 00:25:57,679

newtonian effect that would move things

687

00:26:03,190 --> 00:25:59,440

around and we would notice it because

688

00:26:04,950 --> 00:26:03,200

the oceans would show a tide and so

689

00:26:06,870 --> 00:26:04,960

don't think about gravitational waves as

690

00:26:09,269 --> 00:26:06,880

if that would be the only way we would

691

00:26:12,870 --> 00:26:09,279

learn about a massive compact object

692

00:26:14,549 --> 00:26:12,880

that you know because long before that

693

00:26:16,390 --> 00:26:14,559

there would be effects like on the

694

00:26:18,549 --> 00:26:16,400

oceans a tidal effect due to the

695

00:26:21,110 --> 00:26:18,559

newtonian gravity that would

696

00:26:22,789 --> 00:26:21,120

move the oceans around in a way that is

697

00:26:25,510 --> 00:26:22,799

noticeable so

698

00:26:27,590 --> 00:26:25,520

so i would suggest not to think about

699

00:26:30,950 --> 00:26:27,600

gravitational waves as a good

700

00:26:32,870 --> 00:26:30,960

way of detecting um objects because

701  
00:26:36,310 --> 00:26:32,880  
there are much bigger effects that come

702  
00:26:39,430 --> 00:26:36,320  
into play before gravitation waves uh

703  
00:26:41,590 --> 00:26:39,440  
affect us or are measurable just based

704  
00:26:44,870 --> 00:26:41,600  
on gravity i'm saying

705  
00:26:46,310 --> 00:26:44,880  
there are other effects based on gravity

706  
00:26:49,990 --> 00:26:46,320  
that are much stronger like the

707  
00:26:51,110 --> 00:26:50,000  
newtonian force uh of a passing object

708  
00:26:52,789 --> 00:26:51,120  
so

709  
00:26:56,470 --> 00:26:52,799  
it's very difficult to generate

710  
00:26:58,710 --> 00:26:56,480  
detectable gravitational waves without

711  
00:27:00,230 --> 00:26:58,720  
producing a strong newtonian force

712  
00:27:02,870 --> 00:27:00,240  
that's my point

713  
00:27:04,230 --> 00:27:02,880

so i would argue

714

00:27:06,390 --> 00:27:04,240

let's not think about gravitational

715

00:27:08,630 --> 00:27:06,400

waves as a good way to detect things

716

00:27:09,909 --> 00:27:08,640

we can use newtonian

717

00:27:13,350 --> 00:27:09,919

gravity

718

00:27:14,789 --> 00:27:13,360

to detect them much more easily and on

719

00:27:17,350 --> 00:27:14,799

top of that there are other things that

720

00:27:19,510 --> 00:27:17,360

we can observe of course using

721

00:27:21,350 --> 00:27:19,520

light you know radiation

722

00:27:23,590 --> 00:27:21,360

either reflected of the object or

723

00:27:26,149 --> 00:27:23,600

emitted by the object much easier to

724

00:27:27,909 --> 00:27:26,159

detect much much easier

725

00:27:29,430 --> 00:27:27,919

thanks for the explanation and some of

726

00:27:30,950 --> 00:27:29,440

the more scientific minded people i'm

727

00:27:32,870 --> 00:27:30,960

sure would have appreciated the detail

728

00:27:34,149 --> 00:27:32,880

you've gone into as well

729

00:27:35,750 --> 00:27:34,159

something you've talked about in the

730

00:27:37,990 --> 00:27:35,760

past avi is

731

00:27:39,830 --> 00:27:38,000

looking for strange fish and the idea

732

00:27:42,149 --> 00:27:39,840

that hopefully we could capture that

733

00:27:45,029 --> 00:27:42,159

amazing picture that photograph that

734

00:27:47,029 --> 00:27:45,039

data of something truly anomalous

735

00:27:49,909 --> 00:27:47,039

if you did as part of the galileo

736

00:27:51,510 --> 00:27:49,919

project capture this strange fish um how

737

00:27:53,430 --> 00:27:51,520

do you go about releasing that to the

738

00:27:55,269 --> 00:27:53,440

public you mentioned obviously you would

739

00:27:57,029 --> 00:27:55,279

you would release that to the public

740

00:27:59,190 --> 00:27:57,039

would there be some sort of press

741

00:28:00,310 --> 00:27:59,200

release or an event what what would that

742

00:28:03,510 --> 00:28:00,320

look like

743

00:28:05,590 --> 00:28:03,520

well it first of all we would as i said

744

00:28:07,750 --> 00:28:05,600

make sure that we understand how the

745

00:28:10,310 --> 00:28:07,760

data was collected and that what we are

746

00:28:12,950 --> 00:28:10,320

dealing with is real and it's not easily

747

00:28:14,789 --> 00:28:12,960

explainable as a natural phenomena or

748

00:28:16,630 --> 00:28:14,799

human-made object

749

00:28:18,389 --> 00:28:16,640

and then of course

750

00:28:20,950 --> 00:28:18,399

we will write a scientific paper about

751

00:28:23,029 --> 00:28:20,960

it uh to be submitted to a scientific

752

00:28:25,190 --> 00:28:23,039

journal peer-reviewed journal

753

00:28:27,110 --> 00:28:25,200

and have a press release about it and

754

00:28:29,669 --> 00:28:27,120

the data i should say at the end of all

755

00:28:31,350 --> 00:28:29,679

of this the data will be

756

00:28:32,549 --> 00:28:31,360

made available

757

00:28:34,870 --> 00:28:32,559

to anyone

758

00:28:36,789 --> 00:28:34,880

um we will never hold the data to

759

00:28:38,230 --> 00:28:36,799

ourselves because you know

760

00:28:40,630 --> 00:28:38,240

it's really

761

00:28:42,830 --> 00:28:40,640

trying to figure out what is going on in

762

00:28:45,669 --> 00:28:42,840

the vicinity of earth trying to figure

763

00:28:46,789 --> 00:28:45,679

out that knowledge which should be

764

00:28:48,470 --> 00:28:46,799

shared

765

00:28:51,190 --> 00:28:48,480

with all humans you know it doesn't

766

00:28:53,909 --> 00:28:51,200

adhere to national borders doesn't it's

767

00:28:56,230 --> 00:28:53,919

not a question of us you know knowing

768

00:28:57,590 --> 00:28:56,240

something that nobody else knows

769

00:28:59,669 --> 00:28:57,600

that's not really the issue and the

770

00:29:01,830 --> 00:28:59,679

other thing i should say is you know

771

00:29:03,190 --> 00:29:01,840

once we release the data and people can

772

00:29:06,389 --> 00:29:03,200

look at it

773

00:29:08,950 --> 00:29:06,399

i don't feel uh you know the need to

774

00:29:10,389 --> 00:29:08,960

convince people uh if the data is clear

775

00:29:12,549 --> 00:29:10,399

you know if if there is a high

776  
00:29:13,990 --> 00:29:12,559  
resolution image of an object that looks

777  
00:29:16,230 --> 00:29:14,000  
artificial

778  
00:29:19,029 --> 00:29:16,240  
and yet it moves in ways that our

779  
00:29:22,630 --> 00:29:19,039  
technology technologies cannot reproduce

780  
00:29:25,110 --> 00:29:22,640  
or we cannot imagine a natural way of

781  
00:29:26,789 --> 00:29:25,120  
making such an object you know like for

782  
00:29:28,950 --> 00:29:26,799  
example if it moves at a fraction of the

783  
00:29:31,510 --> 00:29:28,960  
speed of light or accelerates in in very

784  
00:29:34,149 --> 00:29:31,520  
strange ways you know um

785  
00:29:35,430 --> 00:29:34,159  
if people want to

786  
00:29:36,149 --> 00:29:35,440  
argue with that

787  
00:29:37,909 --> 00:29:36,159  
so

788  
00:29:40,549 --> 00:29:37,919

let them argue with that you know it's

789

00:29:42,310 --> 00:29:40,559

not a matter of a popularity contest on

790

00:29:44,950 --> 00:29:42,320

twitter

791

00:29:48,310 --> 00:29:44,960

just for the same reason that it was not

792

00:29:49,110 --> 00:29:48,320

necessary for galileo uh four centuries

793

00:29:51,590 --> 00:29:49,120

ago

794

00:29:53,990 --> 00:29:51,600

to convince the philosophers they didn't

795

00:29:55,430 --> 00:29:54,000

believe him they put him in house arrest

796

00:29:57,750 --> 00:29:55,440

today they would have cancelled him on

797

00:29:59,430 --> 00:29:57,760

social media that was not really the

798

00:30:01,990 --> 00:29:59,440

issue the issue is not whether they

799

00:30:03,110 --> 00:30:02,000

agree with him the issue is whether he's

800

00:30:06,470 --> 00:30:03,120

right

801  
00:30:09,110 --> 00:30:06,480  
and uh the evidence is the best way to

802  
00:30:10,710 --> 00:30:09,120  
demonstrate that you're right it's not

803  
00:30:12,950 --> 00:30:10,720  
how many people agree with it's not

804  
00:30:14,789 --> 00:30:12,960  
politics you see and

805  
00:30:16,710 --> 00:30:14,799  
if you were to ask those philosophers to

806  
00:30:18,710 --> 00:30:16,720  
design a space mission to mars they

807  
00:30:20,549 --> 00:30:18,720  
would never get to their destination

808  
00:30:22,149 --> 00:30:20,559  
because they thought that mars moves

809  
00:30:24,630 --> 00:30:22,159  
around the air so they had the wrong

810  
00:30:26,149 --> 00:30:24,640  
idea and reality is whatever it is you

811  
00:30:27,990 --> 00:30:26,159  
know the earth continued to move around

812  
00:30:30,310 --> 00:30:28,000  
the sun even though this philosopher

813  
00:30:32,310 --> 00:30:30,320

disagreed with that and the galileo

814

00:30:35,269 --> 00:30:32,320

project is called after galileo for that

815

00:30:37,029 --> 00:30:35,279

reason that we will base our statements

816

00:30:39,750 --> 00:30:37,039

on the evidence

817

00:30:41,510 --> 00:30:39,760

and frankly it's not a popularity

818

00:30:44,549 --> 00:30:41,520

contest

819

00:30:46,310 --> 00:30:44,559

you mentioned galileo and the house

820

00:30:48,950 --> 00:30:46,320

arrest and philosophers you know thought

821

00:30:50,950 --> 00:30:48,960

he was wrong about his observations

822

00:30:53,590 --> 00:30:50,960

do you think it's equally as important

823

00:30:55,590 --> 00:30:53,600

to be able to accept being wrong in this

824

00:30:57,430 --> 00:30:55,600

field because you mentioned einstein

825

00:30:59,830 --> 00:30:57,440

himself who once thought that the

826  
00:31:02,470 --> 00:30:59,840  
universe was static and wasn't expanding

827  
00:31:04,549 --> 00:31:02,480  
but when he finds out actually as he can

828  
00:31:06,630 --> 00:31:04,559  
admit do you know what i never thought

829  
00:31:08,789 --> 00:31:06,640  
of this or whatever that was and he can

830  
00:31:11,830 --> 00:31:08,799  
move on and help in the study

831  
00:31:14,630 --> 00:31:11,840  
it still seems that so many mainstream

832  
00:31:17,190 --> 00:31:14,640  
physicists scientists um astrologists

833  
00:31:19,110 --> 00:31:17,200  
astronomers sorry and others don't want

834  
00:31:21,029 --> 00:31:19,120  
to get involved in the conversation i

835  
00:31:23,990 --> 00:31:21,039  
know in the uk we have professor brian

836  
00:31:25,830 --> 00:31:24,000  
cox who is somewhat of a celebrity but

837  
00:31:27,509 --> 00:31:25,840  
is still quite outspoken on the subject

838  
00:31:30,070 --> 00:31:27,519

and doesn't like entertaining the notion

839

00:31:30,950 --> 00:31:30,080

of aliens or extraterrestrials

840

00:31:33,029 --> 00:31:30,960

um

841

00:31:34,710 --> 00:31:33,039

uh certain certain astronauts recently

842

00:31:37,190 --> 00:31:34,720

have also come out again i think it was

843

00:31:38,470 --> 00:31:37,200

chris hadfield today was quoted again

844

00:31:40,389 --> 00:31:38,480

and saying you know if you think there's

845

00:31:41,990 --> 00:31:40,399

aliens out there you're a bit stupid

846

00:31:44,149 --> 00:31:42,000

basically which is a strange statement

847

00:31:46,149 --> 00:31:44,159

to make so do you think it's important

848

00:31:47,990 --> 00:31:46,159

that people can accept that there could

849

00:31:50,149 --> 00:31:48,000

be something else out there and help

850

00:31:52,310 --> 00:31:50,159

move that conversation forward

851

00:31:54,389 --> 00:31:52,320

yeah so i do think many of these

852

00:31:55,990 --> 00:31:54,399

statements are made because

853

00:31:58,789 --> 00:31:56,000

the people who make them think that they

854

00:32:02,230 --> 00:31:58,799

are popular and they want to be liked on

855

00:32:03,830 --> 00:32:02,240

twitter and social media okay so what

856

00:32:05,750 --> 00:32:03,840

that reflects

857

00:32:07,830 --> 00:32:05,760

is sort of

858

00:32:10,310 --> 00:32:07,840

the the current uh

859

00:32:13,190 --> 00:32:10,320

trends in society you know like it's

860

00:32:15,750 --> 00:32:13,200

completely legitimate and and

861

00:32:19,190 --> 00:32:15,760

acceptable to dismiss and ridicule this

862

00:32:21,990 --> 00:32:19,200

subject and to say extraordinary claims

863

00:32:24,470 --> 00:32:22,000

require extraordinary evidence which

864

00:32:26,630 --> 00:32:24,480

is a quote from carl sagan but i

865

00:32:28,389 --> 00:32:26,640

disagree with that because i think that

866

00:32:30,389 --> 00:32:28,399

extraordinary evidence requires

867

00:32:32,630 --> 00:32:30,399

extraordinary funding so

868

00:32:33,350 --> 00:32:32,640

you know i call it the ostrich factor if

869

00:32:44,070 --> 00:32:33,360

you

870

00:32:45,509 --> 00:32:44,080

look for that and

871

00:32:47,990 --> 00:32:45,519

if you look for example at the search

872

00:32:50,470 --> 00:32:48,000

for dark matter there were billions of

873

00:32:52,149 --> 00:32:50,480

dollars invested in that and we haven't

874

00:32:54,389 --> 00:32:52,159

found it so if we search for

875

00:32:56,230 --> 00:32:54,399

technological equipment for 40 years and

876

00:32:59,430 --> 00:32:56,240

invest billions of dollars and not find

877

00:33:02,470 --> 00:32:59,440

anything we would be just the same point

878

00:33:04,630 --> 00:33:02,480

as dark matter searches are today so my

879

00:33:06,230 --> 00:33:04,640

point is those people that ridicule the

880

00:33:08,549 --> 00:33:06,240

subject why don't they ridicule the

881

00:33:11,750 --> 00:33:08,559

possibility that dark matter is made of

882

00:33:15,110 --> 00:33:11,760

um the lightest supersymmetric particle

883

00:33:17,190 --> 00:33:15,120

after all you know not only that is a

884

00:33:19,190 --> 00:33:17,200

possibility that was not verified by

885

00:33:21,350 --> 00:33:19,200

experiment so you can call it a

886

00:33:23,269 --> 00:33:21,360

speculation but also we invested

887

00:33:25,269 --> 00:33:23,279

billions of dollars searching for that

888

00:33:27,269 --> 00:33:25,279

and didn't find it so you should

889

00:33:29,029 --> 00:33:27,279

ridicule it twice

890

00:33:30,630 --> 00:33:29,039

after investing the billions of dollars

891

00:33:33,430 --> 00:33:30,640

we didn't find it it's not just that it

892

00:33:35,350 --> 00:33:33,440

was a speculation to start with and yet

893

00:33:36,710 --> 00:33:35,360

that is part of the mainstream and you

894

00:33:39,350 --> 00:33:36,720

wouldn't hear these people saying

895

00:33:41,350 --> 00:33:39,360

anything bad about the speculation that

896

00:33:43,430 --> 00:33:41,360

the dark matter is

897

00:33:44,870 --> 00:33:43,440

the lightest supersymmetric particle

898

00:33:46,549 --> 00:33:44,880

even though we invested the money we

899

00:33:48,549 --> 00:33:46,559

didn't find it okay you wouldn't hear

900

00:33:49,669 --> 00:33:48,559

them criticize it

901  
00:33:51,269 --> 00:33:49,679  
and yet

902  
00:33:52,789 --> 00:33:51,279  
in the in terms of searching for

903  
00:33:54,789 --> 00:33:52,799  
something like us

904  
00:33:57,669 --> 00:33:54,799  
that sent equipment to

905  
00:34:00,630 --> 00:33:57,679  
space searching for those relics which

906  
00:34:03,350 --> 00:34:00,640  
is not a speculative and would have huge

907  
00:34:05,909 --> 00:34:03,360  
impact on society if we find it there is

908  
00:34:06,789 --> 00:34:05,919  
this ridicule and the way i see it is

909  
00:34:07,990 --> 00:34:06,799  
just

910  
00:34:09,750 --> 00:34:08,000  
um

911  
00:34:12,310 --> 00:34:09,760  
you know as a result of

912  
00:34:13,750 --> 00:34:12,320  
social norms at this time it has nothing

913  
00:34:15,030 --> 00:34:13,760

to do with the evidence because as i

914

00:34:17,750 --> 00:34:15,040

said

915

00:34:19,510 --> 00:34:17,760

on the nature of dark matter we actually

916

00:34:21,750 --> 00:34:19,520

searched and didn't find so that's even

917

00:34:25,349 --> 00:34:21,760

a worse point to be in here we didn't

918

00:34:27,750 --> 00:34:25,359

even search so how can that be how can

919

00:34:30,310 --> 00:34:27,760

it be that people have resistance to the

920

00:34:31,990 --> 00:34:30,320

actual search and the point is if if you

921

00:34:34,069 --> 00:34:32,000

don't fund the search you would never

922

00:34:37,589 --> 00:34:34,079

find anything and the galileo project

923

00:34:39,349 --> 00:34:37,599

tries to break that mold and my hope is

924

00:34:41,510 --> 00:34:39,359

to bring this subject to the mainstream

925

00:34:44,069 --> 00:34:41,520

of physics where it belongs because the

926

00:34:46,230 --> 00:34:44,079

public cares about it the public finds

927

00:34:47,909 --> 00:34:46,240

science and we should just search now if

928

00:34:49,990 --> 00:34:47,919

we don't find anything

929

00:34:52,069 --> 00:34:50,000

so be it you know we we will report

930

00:34:54,230 --> 00:34:52,079

whatever we see and we will use the

931

00:34:56,069 --> 00:34:54,240

scientific method and

932

00:34:58,390 --> 00:34:56,079

you know that's the way science works i

933

00:35:00,230 --> 00:34:58,400

just cannot understand why people would

934

00:35:01,270 --> 00:35:00,240

ridicule the possibility that something

935

00:35:03,510 --> 00:35:01,280

like us

936

00:35:06,069 --> 00:35:03,520

existed a billion years ago on another

937

00:35:07,829 --> 00:35:06,079

planet that sent probes you know that i

938

00:35:09,990 --> 00:35:07,839

don't think albert einstein was the

939

00:35:11,990 --> 00:35:10,000

smartest scientist that ever lived since

940

00:35:14,150 --> 00:35:12,000

the big bang

941

00:35:16,150 --> 00:35:14,160

now i'm hoping when you go to this

942

00:35:18,550 --> 00:35:16,160

bitcoin event that some of those

943

00:35:20,310 --> 00:35:18,560

investors with with big pockets and deep

944

00:35:22,390 --> 00:35:20,320

pockets give you some of the money

945

00:35:23,910 --> 00:35:22,400

you're hoping for if not all of it

946

00:35:25,430 --> 00:35:23,920

we keep hearing that there are

947

00:35:29,349 --> 00:35:25,440

connections potentially between

948

00:35:31,430 --> 00:35:29,359

anomalous objects uap and on the water

949

00:35:34,069 --> 00:35:31,440

and we hear about also nuclear

950

00:35:36,150 --> 00:35:34,079

facilities nuclear technology does any

951  
00:35:38,069 --> 00:35:36,160  
of that come into your thinking with if

952  
00:35:40,630 --> 00:35:38,079  
you get the opportunity to put multiple

953  
00:35:42,790 --> 00:35:40,640  
telescopes and center systems up that

954  
00:35:45,510 --> 00:35:42,800  
you would hope to set something up close

955  
00:35:47,510 --> 00:35:45,520  
to nuclear facilities or near bodies of

956  
00:35:49,349 --> 00:35:47,520  
water that may be of interest

957  
00:35:51,349 --> 00:35:49,359  
yeah so the one thing you find if you

958  
00:35:53,190 --> 00:35:51,359  
look at all the reports on

959  
00:35:54,150 --> 00:35:53,200  
ufos or uap

960  
00:35:55,829 --> 00:35:54,160  
is that

961  
00:35:58,630 --> 00:35:55,839  
the number of reports is highly

962  
00:36:00,310 --> 00:35:58,640  
correlated with the population density

963  
00:36:03,270 --> 00:36:00,320

and that's simply because there are more

964

00:36:05,829 --> 00:36:03,280

eyes at the sky in places where humans

965

00:36:08,150 --> 00:36:05,839

are and um moreover

966

00:36:11,270 --> 00:36:08,160

military facilities nuclear facilities

967

00:36:13,270 --> 00:36:11,280

are being monitored all the time so um

968

00:36:15,030 --> 00:36:13,280

the fact that there there are lots of

969

00:36:16,790 --> 00:36:15,040

reports coming from those facilities

970

00:36:19,510 --> 00:36:16,800

doesn't mean that there is more activity

971

00:36:22,150 --> 00:36:19,520

there it just means that these regions

972

00:36:24,150 --> 00:36:22,160

are more are monitored more often

973

00:36:25,750 --> 00:36:24,160

at least to to zeroth order that's

974

00:36:26,710 --> 00:36:25,760

that's what you conclude when you look

975

00:36:28,069 --> 00:36:26,720

at that

976  
00:36:30,550 --> 00:36:28,079  
and um

977  
00:36:31,910 --> 00:36:30,560  
in my mind it's it's quite possible that

978  
00:36:33,430 --> 00:36:31,920  
these things

979  
00:36:34,790 --> 00:36:33,440  
happen everywhere

980  
00:36:39,109 --> 00:36:34,800  
that

981  
00:36:41,589 --> 00:36:39,119  
um we should just um go to go to places

982  
00:36:43,109 --> 00:36:41,599  
uh you know everywhere on earth and see

983  
00:36:45,829 --> 00:36:43,119  
if we we can

984  
00:36:48,230 --> 00:36:45,839  
find evidence for that and but of course

985  
00:36:49,829 --> 00:36:48,240  
when we choose the locations the sites

986  
00:36:51,430 --> 00:36:49,839  
where we want to put our telescope

987  
00:36:53,990 --> 00:36:51,440  
systems we will take that into

988  
00:36:55,670 --> 00:36:54,000

consideration but uh we will make sure

989

00:36:57,510 --> 00:36:55,680

that we don't violate the law you know

990

00:37:00,790 --> 00:36:57,520

we can't

991

00:37:03,190 --> 00:37:00,800

go into areas that are classified we

992

00:37:05,510 --> 00:37:03,200

will try to to look at the sky from

993

00:37:07,750 --> 00:37:05,520

vantage points where there is no

994

00:37:09,829 --> 00:37:07,760

conflict with national

995

00:37:10,870 --> 00:37:09,839

not national security interests

996

00:37:12,710 --> 00:37:10,880

of course

997

00:37:14,950 --> 00:37:12,720

and i wonder havi you talk about

998

00:37:17,190 --> 00:37:14,960

reproducible results as really important

999

00:37:18,550 --> 00:37:17,200

within science it's it's the be all and

1000

00:37:21,349 --> 00:37:18,560

end all in terms of you know being able

1001  
00:37:23,910 --> 00:37:21,359  
to reproduce that data if you find one

1002  
00:37:27,349 --> 00:37:23,920  
of these telescopes particularly is

1003  
00:37:29,589 --> 00:37:27,359  
picking up objects over a period of time

1004  
00:37:32,870 --> 00:37:29,599  
other plans to potentially i'll i'll use

1005  
00:37:34,470 --> 00:37:32,880  
the phrase bait or try and

1006  
00:37:36,470 --> 00:37:34,480  
try and get one of these things to come

1007  
00:37:37,990 --> 00:37:36,480  
out via any methods or is it purely

1008  
00:37:39,190 --> 00:37:38,000  
observational

1009  
00:37:42,470 --> 00:37:39,200  
yeah first

1010  
00:37:44,790 --> 00:37:42,480  
my philosophy is getting passive

1011  
00:37:46,870 --> 00:37:44,800  
uh data basically observing it from a

1012  
00:37:48,790 --> 00:37:46,880  
distance just like you go to the zoo and

1013  
00:37:50,630 --> 00:37:48,800

you look at the giraffes and the

1014

00:37:51,910 --> 00:37:50,640

elephants and you try to see what they

1015

00:37:55,270 --> 00:37:51,920

are doing and

1016

00:37:56,069 --> 00:37:55,280

and learn about their nature okay

1017

00:37:58,630 --> 00:37:56,079

but

1018

00:37:59,430 --> 00:37:58,640

if you do find something unusual that

1019

00:38:01,670 --> 00:37:59,440

they

1020

00:38:03,510 --> 00:38:01,680

came from outside of this earth

1021

00:38:05,990 --> 00:38:03,520

the question is what to do

1022

00:38:08,310 --> 00:38:06,000

and you know uh that is a serious issue

1023

00:38:10,230 --> 00:38:08,320

because in the past most discussions

1024

00:38:13,990 --> 00:38:10,240

were about a radio signal that comes

1025

00:38:15,990 --> 00:38:14,000

from a star tens of thousands of

1026  
00:38:18,470 --> 00:38:16,000  
light years away so you have plenty of

1027  
00:38:20,630 --> 00:38:18,480  
time to decide what to do about that

1028  
00:38:22,390 --> 00:38:20,640  
information but if you have a visitor in

1029  
00:38:24,470 --> 00:38:22,400  
your backyard you have to respond

1030  
00:38:27,030 --> 00:38:24,480  
immediately and currently we don't have

1031  
00:38:28,710 --> 00:38:27,040  
a protocol that we you know there needs

1032  
00:38:30,950 --> 00:38:28,720  
to be an organization that will

1033  
00:38:33,030 --> 00:38:30,960  
represent humanity the question is who

1034  
00:38:34,870 --> 00:38:33,040  
represents humanity and

1035  
00:38:36,870 --> 00:38:34,880  
that organization we need to decide how

1036  
00:38:37,990 --> 00:38:36,880  
to engage with this object once we know

1037  
00:38:40,069 --> 00:38:38,000  
what it does

1038  
00:38:42,710 --> 00:38:40,079

so my but my recommendation is the first

1039

00:38:44,390 --> 00:38:42,720

step is just monitor the object see what

1040

00:38:46,390 --> 00:38:44,400

kind of information it's seeking

1041

00:38:48,870 --> 00:38:46,400

assuming the object is active you know

1042

00:38:50,790 --> 00:38:48,880

there could be interstellar artifacts or

1043

00:38:52,790 --> 00:38:50,800

interstellar relics

1044

00:38:55,829 --> 00:38:52,800

that originate from technological

1045

00:38:58,069 --> 00:38:55,839

civilizations that are just space trash

1046

00:38:59,990 --> 00:38:58,079

you know they they just like voyager in

1047

00:39:01,670 --> 00:39:00,000

a billion years from now would not be

1048

00:39:03,829 --> 00:39:01,680

functional and

1049

00:39:06,310 --> 00:39:03,839

there may be a lot of trash out there

1050

00:39:09,829 --> 00:39:06,320

you know if we see a meteor that happens

1051  
00:39:12,310 --> 00:39:09,839  
to be technological debris some

1052  
00:39:14,870 --> 00:39:12,320  
technological relic

1053  
00:39:17,670 --> 00:39:14,880  
it might be just trash it it will not

1054  
00:39:19,589 --> 00:39:17,680  
try to seek any information just burn

1055  
00:39:21,990 --> 00:39:19,599  
partly burn in the atmosphere then land

1056  
00:39:24,550 --> 00:39:22,000  
and we could see that it's technological

1057  
00:39:26,069 --> 00:39:24,560  
um and the question is which fraction of

1058  
00:39:28,069 --> 00:39:26,079  
the things we see

1059  
00:39:29,829 --> 00:39:28,079  
are space trash you know that just

1060  
00:39:33,510 --> 00:39:29,839  
happened to pass by

1061  
00:39:36,230 --> 00:39:33,520  
uh versus um you know equipment that has

1062  
00:39:37,430 --> 00:39:36,240  
a purpose that perhaps is

1063  
00:39:39,910 --> 00:39:37,440

uh

1064

00:39:42,630 --> 00:39:39,920

represents artificial intelligence that

1065

00:39:45,190 --> 00:39:42,640

is trying to learn something about

1066

00:39:46,710 --> 00:39:45,200

earth you know and um

1067

00:39:48,950 --> 00:39:46,720

i think that's the first thing for us to

1068

00:39:51,109 --> 00:39:48,960

figure out and and then if it does look

1069

00:39:53,829 --> 00:39:51,119

for some information we need to to know

1070

00:39:55,670 --> 00:39:53,839

what kind of information is it seeking

1071

00:39:57,349 --> 00:39:55,680

and only then we can start thinking

1072

00:39:59,670 --> 00:39:57,359

about how to respond to it you know and

1073

00:40:02,710 --> 00:39:59,680

we we should all remember the

1074

00:40:05,150 --> 00:40:02,720

story uh from a greek mythology about

1075

00:40:07,510 --> 00:40:05,160

the trojan horse that was

1076

00:40:10,630 --> 00:40:07,520

mischaracterized by

1077

00:40:12,870 --> 00:40:10,640

the citizens of troy

1078

00:40:14,710 --> 00:40:12,880

i want to ask you avi um you wrote an

1079

00:40:16,710 --> 00:40:14,720

article back in march and you spent time

1080

00:40:18,390 --> 00:40:16,720

with journalist leslie kane she

1081

00:40:19,990 --> 00:40:18,400

mentioned during the article that she

1082

00:40:22,390 --> 00:40:20,000

loved the sound of rain to which she

1083

00:40:24,309 --> 00:40:22,400

replied it's even better when it snows

1084

00:40:26,630 --> 00:40:24,319

there is soft silence and then you open

1085

00:40:29,109 --> 00:40:26,640

the door to a completely new reality i

1086

00:40:30,870 --> 00:40:29,119

would like to ask you is it snowing yet

1087

00:40:33,109 --> 00:40:30,880

or are we starting to open that door to

1088

00:40:35,030 --> 00:40:33,119

that new reality it's quite possible

1089

00:40:37,190 --> 00:40:35,040

that it's snowing and we just didn't

1090

00:40:39,190 --> 00:40:37,200

open the door yet and what the galileo

1091

00:40:41,270 --> 00:40:39,200

project is trying to do is

1092

00:40:42,950 --> 00:40:41,280

look through the open door and see what

1093

00:40:45,910 --> 00:40:42,960

what is out there and

1094

00:40:48,150 --> 00:40:45,920

you know my point is

1095

00:40:50,069 --> 00:40:48,160

you know the the the

1096

00:40:53,109 --> 00:40:50,079

signs of something else

1097

00:40:55,270 --> 00:40:53,119

may be silent maybe very uh

1098

00:40:57,510 --> 00:40:55,280

they may not be obvious to us and that's

1099

00:40:59,270 --> 00:40:57,520

why you know if they were obvious then

1100

00:41:01,589 --> 00:40:59,280

we would know about it a long time ago

1101  
00:41:03,670 --> 00:41:01,599  
just like we know about birds you know

1102  
00:41:06,790 --> 00:41:03,680  
we've we've been seeing birds and we

1103  
00:41:08,790 --> 00:41:06,800  
know about them they're part of our life

1104  
00:41:11,430 --> 00:41:08,800  
trees we know about them

1105  
00:41:13,510 --> 00:41:11,440  
uh but obviously you know if we don't

1106  
00:41:14,950 --> 00:41:13,520  
put any effort we will not find those

1107  
00:41:16,870 --> 00:41:14,960  
things that are

1108  
00:41:19,190 --> 00:41:16,880  
a little more subtle you know that not

1109  
00:41:21,109 --> 00:41:19,200  
easy to detect and when enrico fermi

1110  
00:41:22,309 --> 00:41:21,119  
asked where is everybody you know the

1111  
00:41:24,550 --> 00:41:22,319  
point is

1112  
00:41:25,829 --> 00:41:24,560  
if it was obvious he would need to ask

1113  
00:41:27,510 --> 00:41:25,839

it but then

1114

00:41:29,990 --> 00:41:27,520

you know it would have been part of our

1115

00:41:32,150 --> 00:41:30,000

culture to to say oh that there are all

1116

00:41:34,230 --> 00:41:32,160

these visitors coming to us all the time

1117

00:41:36,710 --> 00:41:34,240

you know the fact that we don't have it

1118

00:41:39,109 --> 00:41:36,720

in our our culture means that it's not

1119

00:41:41,589 --> 00:41:39,119

something that comes to us without an

1120

00:41:43,109 --> 00:41:41,599

effort on our behalf just like learning

1121

00:41:45,510 --> 00:41:43,119

about the universe we need to use

1122

00:41:47,829 --> 00:41:45,520

telescopes and that costs money that you

1123

00:41:49,910 --> 00:41:47,839

know you need to put an effort and it it

1124

00:41:52,069 --> 00:41:49,920

sort of makes sense because

1125

00:41:54,069 --> 00:41:52,079

space is huge you know that the size of

1126

00:41:56,630 --> 00:41:54,079

the universe is 10 to the power 19

1127

00:41:58,630 --> 00:41:56,640

bigger than the size of the earth okay

1128

00:42:00,630 --> 00:41:58,640

so we are sitting here on earth and

1129

00:42:03,190 --> 00:42:00,640

asking you know where is everybody

1130

00:42:04,069 --> 00:42:03,200

that's a tiny bit of the space out there

1131

00:42:06,069 --> 00:42:04,079

and

1132

00:42:08,309 --> 00:42:06,079

you know why why would we be so

1133

00:42:10,309 --> 00:42:08,319

important that it would be obvious to us

1134

00:42:12,390 --> 00:42:10,319

that there is something going on and

1135

00:42:15,109 --> 00:42:12,400

then the other thing is the time axis

1136

00:42:16,630 --> 00:42:15,119

you know the universe existed for 13.8

1137

00:42:19,349 --> 00:42:16,640

billion years you know i'm talking

1138

00:42:21,750 --> 00:42:19,359

billions of years and the

1139

00:42:24,150 --> 00:42:21,760

recorded human history is only 10 000

1140

00:42:26,309 --> 00:42:24,160

years old so that's a millionth of that

1141

00:42:28,950 --> 00:42:26,319

of the age of the universe and

1142

00:42:31,109 --> 00:42:28,960

we don't know what happened before we

1143

00:42:34,230 --> 00:42:31,119

we just have such a short glimpse of

1144

00:42:37,030 --> 00:42:34,240

what we know about that i would argue

1145

00:42:39,030 --> 00:42:37,040

let's be modest and let's really look

1146

00:42:40,309 --> 00:42:39,040

around before we make any statements you

1147

00:42:42,230 --> 00:42:40,319

know

1148

00:42:43,990 --> 00:42:42,240

avi i got sent a lot of listener

1149

00:42:45,510 --> 00:42:44,000

questions which we won't have time for

1150

00:42:47,349 --> 00:42:45,520

today but i'd love to get you back on

1151  
00:42:49,109 --> 00:42:47,359  
soon i'd like to finish with this one

1152  
00:42:51,030 --> 00:42:49,119  
though from bartholomew

1153  
00:42:53,430 --> 00:42:51,040  
based on the collective experience of

1154  
00:42:55,589 --> 00:42:53,440  
you avi and the advisory board for the

1155  
00:42:57,510 --> 00:42:55,599  
galileo project what is your current

1156  
00:42:59,910 --> 00:42:57,520  
level of confidence that truly

1157  
00:43:01,990 --> 00:42:59,920  
scientifically anomalous object will be

1158  
00:43:04,230 --> 00:43:02,000  
identified and documented inside the

1159  
00:43:05,670 --> 00:43:04,240  
earth's atmosphere or in the near earth

1160  
00:43:06,870 --> 00:43:05,680  
region

1161  
00:43:07,990 --> 00:43:06,880  
well

1162  
00:43:12,230 --> 00:43:08,000  
i

1163  
00:43:16,069 --> 00:43:12,240

um

1164

00:43:18,630 --> 00:43:16,079

the poem by frost uh robert frost

1165

00:43:22,309 --> 00:43:18,640

that talked about uh taking the road not

1166

00:43:24,550 --> 00:43:22,319

taken uh when two paths diverged in the

1167

00:43:27,510 --> 00:43:24,560

woods and uh

1168

00:43:30,870 --> 00:43:27,520

according to him uh taking the road not

1169

00:43:33,270 --> 00:43:30,880

taken uh made all the difference for him

1170

00:43:35,589 --> 00:43:33,280

uh for me it offers the scientific

1171

00:43:37,750 --> 00:43:35,599

advantage that you might find low

1172

00:43:41,270 --> 00:43:37,760

hanging fruit because nobody took that

1173

00:43:43,510 --> 00:43:41,280

path so i'm actually optimistic that we

1174

00:43:45,829 --> 00:43:43,520

will learn something new uh in the

1175

00:43:47,750 --> 00:43:45,839

coming years as long as we dare to look

1176

00:43:49,430 --> 00:43:47,760

through our telescopes you see as long

1177

00:43:51,109 --> 00:43:49,440

as we don't

1178

00:43:56,470 --> 00:43:51,119

uh

1179

00:43:57,910 --> 00:43:56,480

those the naysayers that say we know the

1180

00:43:59,829 --> 00:43:57,920

answer in advance we don't need to look

1181

00:44:01,349 --> 00:43:59,839

through telescopes which is pretty much

1182

00:44:03,829 --> 00:44:01,359

the approach taken by philosophers

1183

00:44:04,630 --> 00:44:03,839

during the days of galileo so my point

1184

00:44:07,190 --> 00:44:04,640

is

1185

00:44:08,710 --> 00:44:07,200

if we go out and and search

1186

00:44:11,750 --> 00:44:08,720

i'm

1187

00:44:15,030 --> 00:44:11,760

i i would be optimistic that we will

1188

00:44:17,670 --> 00:44:15,040

maybe find something uh new just because

1189

00:44:19,750 --> 00:44:17,680

nobody tried that before you see i mean

1190

00:44:20,790 --> 00:44:19,760

there are anecdotal reports from the

1191

00:44:23,349 --> 00:44:20,800

government which is the most

1192

00:44:25,349 --> 00:44:23,359

conservative organization and from the

1193

00:44:27,109 --> 00:44:25,359

first interstellar object to

1194

00:44:29,430 --> 00:44:27,119

that you know there is something strange

1195

00:44:31,190 --> 00:44:29,440

going on that and that's intriguing for

1196

00:44:33,990 --> 00:44:31,200

me it's not conclusive but it's

1197

00:44:35,510 --> 00:44:34,000

intriguing because it already says you

1198

00:44:36,550 --> 00:44:35,520

know there is there are some anomalies

1199

00:44:39,510 --> 00:44:36,560

out there

1200

00:44:41,510 --> 00:44:39,520

so to figure out what they mean we just

1201

00:44:43,430 --> 00:44:41,520

need to get better data not listen to

1202

00:44:44,870 --> 00:44:43,440

those people on twitter that dismiss the

1203

00:44:46,470 --> 00:44:44,880

subject

1204

00:44:47,910 --> 00:44:46,480

avi we'll have to get you back on as

1205

00:44:49,030 --> 00:44:47,920

soon as possible to get through some of

1206

00:44:51,030 --> 00:44:49,040

those listener questions but i

1207

00:44:52,950 --> 00:44:51,040

appreciate how busy they are and again

1208

00:44:54,230 --> 00:44:52,960

thank you very much for your time thanks

1209

00:44:56,309 --> 00:44:54,240

for having me

1210

00:44:58,230 --> 00:44:56,319

that is all for this week's show thank

1211

00:45:00,309 --> 00:44:58,240

you very much for listening please

1212

00:45:02,950 --> 00:45:00,319

remember to leave the podcaster review

1213

00:45:05,270 --> 00:45:02,960

on your chosen platform you can like

1214

00:45:07,190 --> 00:45:05,280

retweet and subscribe that would all be

1215

00:45:09,349 --> 00:45:07,200

very much appreciated the shows are

1216

00:45:10,870 --> 00:45:09,359

being uploaded onto youtube as we speak

1217

00:45:13,349 --> 00:45:10,880

more and more you can sign up at

1218

00:45:16,069 --> 00:45:13,359

patreon.com forward slash that ufo

1219

00:45:18,309 --> 00:45:16,079

podcast to access shows ad free as well

1220

00:45:21,109 --> 00:45:18,319

please get in touch on twitter facebook

1221

00:45:24,790 --> 00:45:21,119

instagram that ufo podcast of course on

1222

00:45:26,710 --> 00:45:24,800

twitter it's at ufo uap am and again

1223

00:45:29,450 --> 00:45:26,720

folks as always keep looking up you

1224

00:45:44,069 --> 00:45:29,460

never know what you might see

1225

00:45:44,079 --> 00:45:50,470

alice

1226

00:45:50,480 --> 00:45:56,570

i don't think he expected me

1227

00:45:56,580 --> 00:46:05,510

[Music]

1228

00:46:19,210 --> 00:46:07,030

i can't imagine how it could have been

1229

00:46:19,220 --> 00:46:27,030

[Music]

1230

00:46:30,790 --> 00:46:28,790

my head and everything was weird and

1231

00:46:32,150 --> 00:46:30,800

everything was red i helped out my boys

1232

00:46:35,630 --> 00:46:32,160

they thought this was noise they thought

1233

00:46:35,640 --> 00:46:54,230

[Music]

1234

00:46:54,240 --> 00:47:00,130

over there

1235

00:47:09,030 --> 00:47:04,710

[Music]

1236

00:47:09,040 --> 00:47:14,530

consider your serious consider your lies

1237

00:47:36,950 --> 00:47:27,240

[Music]

1238

00:47:48,050 --> 00:47:36,960

it wasn't a tic tac and not quite a

1239

00:47:48,060 --> 00:48:11,109

[Music]

1240

00:48:11,119 --> 00:48:14,850

so