



ABSciCON 2017

MESA, ARIZONA

1
00:00:17,570 --> 00:00:12,250

[Music]

2
00:00:18,230 --> 00:00:17,580

what do you do when they come in for the people

3
00:00:19,700 --> 00:00:18,240

coming in

4
00:00:21,410 --> 00:00:19,710

and my name is Gijs Smulders and the

5
00:00:23,870 --> 00:00:21,420

postdoctoral researcher at the University of

6
00:00:25,760 --> 00:00:23,880

Arizona and CDA men traction on preserving

7
00:00:26,839 --> 00:00:25,770

the specimens populations

8
00:00:29,630 --> 00:00:26,849

and that's what I got at the

9
00:00:31,310 --> 00:00:29,640

hairstresser space telescope audi's copy

10
00:00:33,530 --> 00:00:31,320

populations change your idea of ■■a

11
00:00:34,550 --> 00:00:33,540

typical planter systems look like and

12
00:00:37,040 --> 00:00:34,560

now the app store of

13
00:00:38,990 --> 00:00:37,050

for sister i think i'll planners shape

14

00:00:41,180 --> 00:00:39,000

and it will be mike empty for the

15

00:00:45,889 --> 00:00:41,190

composition of planets and that we

16

00:00:49,819 --> 00:00:47,450

such a condition is work and isolation

17

00:00:53,090 --> 00:00:49,829

and working and span of the eos 10d

18

00:00:53,869 --> 00:00:53,100

person or a solar systems team led by

19

00:00:56,209 --> 00:00:53,879

daniel

20

00:00:58,790 --> 00:00:56,219

popeye cough piai of this project and

21

00:00:59,959 --> 00:00:58,800

its the project of the by next to a

22

00:01:01,849 --> 00:00:59,969

nexus and

23

00:01:04,160 --> 00:01:01,859

and don't be the the overarching goal of

24

00:01:07,130 --> 00:01:04,170

this project is to follow

25

00:01:10,940 --> 00:01:07,140

baby the evolution of her organics

26
00:01:13,340 --> 00:01:10,950
as if from the molecular cloud skill

27
00:01:15,920 --> 00:01:13,350
but the two tough potential

28
00:01:18,560 --> 00:01:15,930
venture into axel planets and so

29
00:01:22,219 --> 00:01:20,300
wesley in this large part like our

30
00:01:27,889 --> 00:01:22,229
organics and in particular order

31
00:01:32,630 --> 00:01:30,170
such kepler space telescope so for

32
00:01:34,190 --> 00:01:32,640
boxes here for environment and kepler

33
00:01:36,319 --> 00:01:34,200
space telescope if successful for trending

34
00:01:40,249 --> 00:01:36,329
exo planet like inge van der hooft

35
00:01:42,260 --> 00:01:40,259
stars and ns found an astonishing variety

36
00:01:43,789 --> 00:01:42,270
of excellence o&s identified about home

37
00:01:45,679 --> 00:01:43,799
a planet track and view thousand

38
00:01:47,719 --> 00:01:45,689

planet know the zipper and

39

00:01:49,429 --> 00:01:47,729

and the main caught the girl the place

40

00:01:51,529 --> 00:01:49,439

on the earlier tanner plants radish and

41

00:01:53,330 --> 00:01:51,539

is suddenly grid the reason is on the

42

00:01:54,319 --> 00:01:53,340

planet and its function on the orbital

43

00:01:55,910 --> 00:01:54,329

period

44

00:01:57,499 --> 00:01:55,920

and have your paw is in the that exciting in

45

00:01:58,880 --> 00:01:57,509

the context on the plans in the driver

46

00:02:00,349 --> 00:01:58,890

sustring you see that it is quite

47

00:02:02,149 --> 00:02:00,359

different populations

48

00:02:03,800 --> 00:02:02,159

would here hard travel plans and for

49

00:02:06,050 --> 00:02:03,810

solar system shock only on the narrow

50

00:02:07,880 --> 00:02:06,060

ledge bit further old and is new book

51
00:02:09,710 --> 00:02:07,890
reads emphasis cupboard and for

52
00:02:13,220 --> 00:02:09,720
reference to be there and nephew to

53
00:02:15,800 --> 00:02:13,230
pot to the skill and so become exactly who

54
00:02:17,510 --> 00:02:15,810
have is plans population lord for the

55
00:02:20,240 --> 00:02:17,520
typical resulted builds are there two

56
00:02:23,840 --> 00:02:20,250
dns size life-line fleece more than

57
00:02:25,370 --> 00:02:23,850
that you and down to show their size and

58
00:02:26,710 --> 00:02:25,380
the large patient how the style of

59
00:02:28,810 --> 00:02:26,720
plenter systems for

60
00:02:33,820 --> 00:02:28,820
en is the old of this from what the

61
00:02:35,590 --> 00:02:33,830
fine in the solar system and so sam on the

62
00:02:36,940 --> 00:02:35,600
planet one here in the helps to on

63
00:02:39,310 --> 00:02:36,950

such kind of planet code letter

64

00:02:41,350 --> 00:02:39,320

there in the he means sons on the stars

65

00:02:43,750 --> 00:02:41,360

they don't or former lines on like stars

66

00:02:46,180 --> 00:02:43,760

as well findel or

67

00:02:48,430 --> 00:02:46,190

with a the final of planet campeggio

68

00:02:50,650 --> 00:02:48,440

surrounding type's of star somogyi swan

69

00:02:52,840 --> 00:02:50,660

some like stars will be solo masqué stars

70

00:02:54,730 --> 00:02:52,850

and lower maes m later there is

71

00:02:56,470 --> 00:02:54,740

now detection bias i have if it

72

00:02:57,730 --> 00:02:56,480

is here due to the tact final square is in the

73

00:02:59,230 --> 00:02:57,740

have double such

74

00:03:01,930 --> 00:02:59,240

i have if the clear songs and closer in

75

00:03:03,310 --> 00:03:01,940

one the stars already have narrower and it's

76

00:03:05,110 --> 00:03:03,320

us have reflect some of the

77

00:03:07,030 --> 00:03:05,120

underlying population statistical the

78

00:03:08,740 --> 00:03:07,040

style of planets and i you

79

00:03:10,090 --> 00:03:08,750

calculation and try to correct for

80

00:03:11,770 --> 00:03:10,100

detection weisses

81

00:03:14,440 --> 00:03:11,780

je find the white wine or one in four

82

00:03:17,080 --> 00:03:14,450

but one in six and stars

83

00:03:18,880 --> 00:03:17,090

mr of earth science plan it skin de

84

00:03:20,590 --> 00:03:18,890

helps to us so and of course there a

85

00:03:21,699 --> 00:03:20,600

much more m starz in de solar no mother

86

00:03:23,920 --> 00:03:21,709

in the galaxy

87

00:03:27,910 --> 00:03:23,930

angie tpestars zo this might be de

88

00:03:32,050 --> 00:03:27,920

prime location to look for travel size

89
00:03:33,699 --> 00:03:32,060
planets in de have tom about such a bucket

90
00:03:35,380 --> 00:03:33,709
focusing on emstar as i was

91
00:03:37,270 --> 00:03:35,390
there first already as a new plan the

92
00:03:39,930 --> 00:03:37,280
formation notice least the how you check

93
00:03:42,550 --> 00:03:39,940
just how you didn't have to or

94
00:03:46,270 --> 00:03:42,560
explain kepler's most popular of excellence

95
00:03:49,210 --> 00:03:46,280
as much check or dare do something for what purpose

96
00:03:50,979 --> 00:03:49,220
nice hey sony lesson in

97
00:03:54,490 --> 00:03:50,989
the press and the full point one percenter

98
00:03:56,949 --> 00:03:54,500
so and so and with r&d van fit belgian

99
00:03:59,710 --> 00:03:56,959
for what tribe or planet you join for so

100
00:04:01,600 --> 00:03:59,720
in particular for llamas endorse people

101
00:04:02,650 --> 00:04:01,610
have done sinhalese in the pas where is

102
00:04:04,660 --> 00:04:02,660
a roll maybe

103
00:04:06,340 --> 00:04:04,670
and you have your form plants the margin

104
00:04:09,789 --> 00:04:06,350
priory dong getten delivers the seven

105
00:04:10,479 --> 00:04:09,799
months beyond and sr way like

106
00:04:12,100 --> 00:04:10,489
alliander

107
00:04:14,680 --> 00:04:12,110
possibilities are the extreme and train

108
00:04:16,210 --> 00:04:14,690
your form lannister are much more much

109
00:04:17,590 --> 00:04:16,220
more become already and you raise your finger

110
00:04:19,930 --> 00:04:17,600
that of lights on right vis that percent

111
00:04:22,090 --> 00:04:19,940
which they this is our we fit within the

112
00:04:23,860 --> 00:04:22,100
tendon form and and model is new

113
00:04:25,450 --> 00:04:23,870

excellence with disco bar it like they

114

00:04:27,010 --> 00:04:25,460

might be the version die machine to

115

00:04:28,990 --> 00:04:27,020

realize the first in axel planetary

116

00:04:31,350 --> 00:04:29,000

system' are there michael sam university

117

00:04:35,640 --> 00:04:31,360

in sorts composition of plan put

118

00:04:39,060 --> 00:04:35,650

just acquainted with whom can sir

119

00:04:41,580 --> 00:04:39,070

en and interesting what planets excellent

120

00:04:43,980 --> 00:04:41,590

arome diploma's en threshing city of nut

121

00:04:46,740 --> 00:04:43,990

release skilled and versions of planters

122

00:04:48,810 --> 00:04:46,750

systems want some black stars and there

123

00:04:50,730 --> 00:04:48,820

seemed to be more planet

124

00:04:52,680 --> 00:04:50,740

run diploma's en start confused want

125

00:04:53,340 --> 00:04:52,690

mars on like stars is the path surprising

126

00:04:55,110 --> 00:04:53,350

with

127

00:04:57,749 --> 00:04:55,120

and so number of studies on this video

128

00:05:00,240 --> 00:04:57,759

come down that of sms absolute number

129

00:05:02,790 --> 00:05:00,250

of clans space star is a function of

130

00:05:04,640 --> 00:05:02,800

effect groups and function of effective

131

00:05:06,600 --> 00:05:04,650

temperature so that they propose proxy for

132

00:05:08,640 --> 00:05:06,610

rmas

133

00:05:10,379 --> 00:05:08,650

suicide dan diplomas and starship

134

00:05:12,689 --> 00:05:10,389

when version by doing' there was a

135

00:05:14,700 --> 00:05:12,699

half plan and space star and and that's

136

00:05:16,980 --> 00:05:14,710

just at work sharp to periods and mass

137

00:05:19,710 --> 00:05:16,990

for the sports on like stars fewer plan

138

00:05:22,460 --> 00:05:19,720

het so far some reason to have more

139

00:05:25,320 --> 00:05:22,470

planets and order the press over outside

140

00:05:27,420 --> 00:05:25,330

less than fifty readers over warm diploma

141

00:05:29,219 --> 00:05:27,430

stars and is in the greater something

142

00:05:32,730 --> 00:05:29,229

different about clare formation megan is

143

00:05:34,469 --> 00:05:32,740

in the front wheel i want to understand and

144

00:05:36,120 --> 00:05:34,479

anyway fines in context or care for

145

00:05:38,010 --> 00:05:36,130

greenpeace plant formation tyreese and

146

00:05:40,529 --> 00:05:38,020

so or

147

00:05:42,450 --> 00:05:40,539

same the thirst magic pot plants

148

00:05:44,550 --> 00:05:42,460

reed is it ilario pulled up some leather in

149

00:05:46,050 --> 00:05:44,560

de fashion and more see that

150

00:05:48,540 --> 00:05:46,060

the moon of just reed

151

00:05:50,339 --> 00:05:48,550

is of increase with the measles star

152

00:05:53,010 --> 00:05:50,349

and exactly match very well what the

153

00:05:55,620 --> 00:05:53,020

giant plants die find more mes of stars

154

00:05:57,330 --> 00:05:55,630

you find more join planets and met for

155

00:05:59,129 --> 00:05:57,340

the slow mo stars me see that this

156

00:06:00,360 --> 00:05:59,139

doesn't really would like to find a line

157

00:06:02,159 --> 00:06:00,370

of material

158

00:06:04,439 --> 00:06:02,169

very closely star locking splenter

159

00:06:09,120 --> 00:06:04,449

assistance dan quite understand

160

00:06:12,210 --> 00:06:09,130

why this form ran so efficiently and so

161

00:06:15,689 --> 00:06:12,220

is more tryin to and the

162

00:06:17,129 --> 00:06:15,699

round love single actions and does to

163

00:06:19,379 --> 00:06:17,139

look at water the livery like how the

164

00:06:22,409 --> 00:06:19,389

planets form and with that all of us the

165

00:06:24,060 --> 00:06:22,419

simulations to be and realistic

166

00:06:26,399 --> 00:06:24,070

for the tribe of excellent there is in die

167

00:06:27,629 --> 00:06:26,409

find so the simulation gentlemen

168

00:06:29,490 --> 00:06:27,639

highlighting some of the seamless

169

00:06:31,649 --> 00:06:29,500

interviews dan the look at war through the

170

00:06:34,050 --> 00:06:31,659

livery and and

171

00:06:36,480 --> 00:06:34,060

to see all planets here in the hem double such

172

00:06:38,399 --> 00:06:36,490

acquired er water so again try to

173

00:06:41,040 --> 00:06:38,409

steal this app to run a large numbers

174

00:06:42,689 --> 00:06:41,050

small formation simulations and to try

175

00:06:44,550 --> 00:06:42,699

busy leeuwarders the composition of plan

176

00:06:46,260 --> 00:06:44,560

is the form in the simoleons

177

00:06:49,940 --> 00:06:46,270

what our do the planetary form die

178

00:06:54,930 --> 00:06:52,530

and pretty much what condition is

179

00:06:57,540 --> 00:06:54,940

developing apple speeches that exoplanet

180

00:06:59,520 --> 00:06:57,550

population observations simulator and

181

00:07:02,160 --> 00:06:59,530

but the simulator is doing it basily

182

00:07:04,230 --> 00:07:02,170

takes the exoplanet population and

183

00:07:07,140 --> 00:07:04,240

bit form simulations

184

00:07:08,700 --> 00:07:07,150

and you come per it to what you what you

185

00:07:11,010 --> 00:07:08,710

need him sir toke simple the kepler

186

00:07:12,690 --> 00:07:11,020

space telescope and so this is your

187

00:07:14,370 --> 00:07:12,700

intrinsic population of planet so

188

00:07:16,740 --> 00:07:14,380

plan weekend 3 is for its sorbitol

189

00:07:18,600 --> 00:07:16,750

period and then the next web is the take

190

00:07:21,090 --> 00:07:18,610

into account the detection efficiency

191

00:07:22,740 --> 00:07:21,100

on the or the kepler space telescope

192

00:07:25,320 --> 00:07:22,750

sorry you so the text think under heavy

193

00:07:26,700 --> 00:07:25,330

your je the text engine the planet cedars

194

00:07:28,650 --> 00:07:26,710

of large and close the death star

195

00:07:31,650 --> 00:07:28,660

messages go further auto that also the

196

00:07:34,560 --> 00:07:31,660

smaller planets and planners ter to

197

00:07:36,510 --> 00:07:34,570

our smaller and here the text fishing

198

00:07:37,860 --> 00:07:36,520

rods my life after something like that

199

00:07:39,620 --> 00:07:37,870

you by monte carlo simulation

200

00:07:40,950 --> 00:07:39,630

and your basily it is intrinsic

201
00:07:42,810 --> 00:07:40,960
population

202
00:07:45,900 --> 00:07:42,820
you have your daxing efficiency and your

203
00:07:47,250 --> 00:07:45,910
full box together you end up with thumpy

204
00:07:48,330 --> 00:07:47,260
that looks a bit like the op surf

205
00:07:50,760 --> 00:07:48,340
distribution

206
00:07:53,100 --> 00:07:50,770
apply theres no fewer planets in

207
00:07:54,360 --> 00:07:53,110
this synthetic observations and then there

208
00:07:57,180 --> 00:07:54,370
is in the previous

209
00:07:58,590 --> 00:07:57,190
itself the feel simulation and now we can

210
00:08:00,840 --> 00:07:58,600
compare this role of synthetic

211
00:08:02,580 --> 00:08:00,850
simulation van models to insert

212
00:08:04,530 --> 00:08:02,590
population and see how well what you're

213
00:08:09,460 --> 00:08:04,540

doing in water doen thing is the

214

00:08:13,720 --> 00:08:11,350

en zo dit tissue i show down so dit is zo

215

00:08:15,550 --> 00:08:13,730

in t the population with the absurd

216

00:08:17,500 --> 00:08:15,560

population bucket simply comparing boxes

217

00:08:21,010 --> 00:08:17,510

that shows

218

00:08:23,590 --> 00:08:21,020

orbit on pirate and us is such a place 3

219

00:08:25,270 --> 00:08:23,600

and not so action molesting too much planet

220

00:08:26,920 --> 00:08:25,280

formation or permanent to

221

00:08:30,640 --> 00:08:26,930

distribute and be used to test this coat

222

00:08:31,960 --> 00:08:30,650

and see little calories that and we the

223

00:08:34,959 --> 00:08:31,970

disturbed simple function chick and i

224

00:08:37,390 --> 00:08:34,969

a gary blood constraints on display

225

00:08:40,480 --> 00:08:37,400

is just reading a game in your chicken curry

226

00:08:43,180 --> 00:08:40,490

does me so the next up is that would

227

00:08:44,620 --> 00:08:43,190

take or a planet formation tender and now so

228

00:08:47,710 --> 00:08:44,630

one thing sorry generate ladder

229

00:08:50,290 --> 00:08:47,720

plants systems usa uk which ones and

230

00:08:53,080 --> 00:08:50,300

look like a bunch of dare and bucket riser

231

00:08:54,580 --> 00:08:53,090

reproduced is population and so you look

232

00:08:56,950 --> 00:08:54,590

at this plot per lot i see that we

233

00:08:59,650 --> 00:08:56,960

don't work or does planets and regions

234

00:09:01,240 --> 00:08:59,660

of prints space jet it is an issue

235

00:09:03,970 --> 00:09:01,250

warm stimuli so is wasted find

236

00:09:06,340 --> 00:09:03,980

expander models to include and start this

237

00:09:08,050 --> 00:09:06,350

very small region here goes

238

00:09:09,550 --> 00:09:08,060

be better reasonable nights wit medium

239

00:09:11,200 --> 00:09:09,560

server or something like that is sodomy good

240

00:09:14,260 --> 00:09:11,210

starting point will to expand and

241

00:09:16,360 --> 00:09:14,270

planet formation models and so weaving

242

00:09:18,190 --> 00:09:16,370

sound and why we have compositions

243

00:09:20,920 --> 00:09:18,200

especially on those spline just so week and

244

00:09:22,720 --> 00:09:20,930

anyway skype or downpour axor uno water

245

00:09:24,579 --> 00:09:22,730

intrinsic frequency is so [___] gets

246

00:09:25,990 --> 00:09:24,589

an sms or

247

00:09:30,100 --> 00:09:26,000

keep so plants grow then what

248

00:09:31,840 --> 00:09:30,110

composition might be and this for evans

249

00:09:34,810 --> 00:09:31,850

and our show you haven't

250

00:09:37,030 --> 00:09:34,820

and are of models anyway models where

251

00:09:39,850 --> 00:09:37,040

so nice in which city formation soft

252

00:09:41,650 --> 00:09:39,860

exchange you for your plants and where you have to

253

00:09:43,900 --> 00:09:41,660

seriously provoke it at the site

254

00:09:46,000 --> 00:09:43,910

before they might be some

255

00:09:47,890 --> 00:09:46,010

and such a large-scale

256

00:09:49,690 --> 00:09:47,900

migration holland and specially when

257

00:09:51,520 --> 00:09:49,700

this loma stars want anyway way

258

00:09:54,130 --> 00:09:51,530

planets monastery the stars

259

00:09:55,390 --> 00:09:54,140

and this i want to be there in this

260

00:09:58,900 --> 00:09:55,400

channel megan is a that's going home

261

00:10:00,460 --> 00:09:58,910

in a lovely pink planet migration is is

262

00:10:02,829 --> 00:10:00,470

one of the factors he won it en

263

00:10:04,690 --> 00:10:02,839

mechanisms and explains the population

264

00:10:06,460 --> 00:10:04,700

and planet migration moezel op een

265

00:10:08,560 --> 00:10:06,470

action plan is public was de planner for

266

00:10:11,500 --> 00:10:08,570

murder old and then migrating to the

267

00:10:15,640 --> 00:10:13,780

and that's how you should siri is the outcome of

268

00:10:17,860 --> 00:10:15,650

somebodys planet migration models and

269

00:10:19,449 --> 00:10:17,870

efficacy like they don't produce something like that or

270

00:10:21,640 --> 00:10:19,459

parameters space very well this en

271

00:10:22,540 --> 00:10:21,650

een issue when server still working on

272

00:10:25,060 --> 00:10:22,550

and try to win

273

00:10:26,590 --> 00:10:25,070

test box in the nations and in search of

274

00:10:29,350 --> 00:10:26,600

penetrate the issues were not doing

275

00:10:32,139 --> 00:10:29,360

just like that drd puppy so in advance 3 the

276

00:10:33,670 --> 00:10:32,149

right amount of planets

277

00:10:35,800 --> 00:10:33,680

with the minus pool espace lumière do your

278

00:10:37,329 --> 00:10:35,810

planet city migrating add your clients

279

00:10:38,889 --> 00:10:37,339

come in and in this comes into my better

280

00:10:40,810 --> 00:10:38,899

falling de stark's stepping in

281

00:10:43,600 --> 00:10:40,820

some where would give you a bunch of

282

00:10:45,670 --> 00:10:43,610

planets and a very local asb smart where

283

00:10:46,900 --> 00:10:45,680

the city migrating have they is not quite

284

00:10:48,280 --> 00:10:46,910

getting back on dare you so this is

285

00:10:51,639 --> 00:10:48,290

something that had to be very hard to work

286

00:10:53,590 --> 00:10:51,649

on into windows models to make sure that

287

00:10:55,690 --> 00:10:53,600

and box moorish influence planet migration

288

00:10:59,560 --> 00:10:55,700

project for idea of ■■compositions of

289

00:11:05,410 --> 00:10:59,570

planetary systems will actually match

290

00:11:08,259 --> 00:11:05,420

some beer dare and model to come as much next

291

00:11:10,960 --> 00:11:08,269

weekend or my interpreter so who like to say

292

00:11:12,490 --> 00:11:10,970

that training planet

293

00:11:14,019 --> 00:11:12,500

formation men like the thumping wanted

294

00:11:14,949 --> 00:11:14,029

to surf taking into account the

295

00:11:17,740 --> 00:11:14,959

exoplanet

296

00:11:19,420 --> 00:11:17,750

population that boy surfs and who

297

00:11:21,130 --> 00:11:19,430

thinks that androidplanet is there systems

298

00:11:23,440 --> 00:11:21,140

and machine de planetary cities of light

299

00:11:26,050 --> 00:11:23,450

de bit different and those lines on like

300

00:11:28,000 --> 00:11:26,060

stars en so thin that simpc skilled and

301
00:11:30,220 --> 00:11:28,010
persons with your finger additional plant

302
00:11:31,870 --> 00:11:30,230
formation mechanisms and play het mee

303
00:11:33,460 --> 00:11:31,880
alter the composition of the tribe of

304
00:11:35,139 --> 00:11:33,470
clans het mee voor

305
00:11:37,889 --> 00:11:35,149
and in particular for migration of

306
00:11:40,930 --> 00:11:37,899
planets plays an important role in

307
00:11:43,329 --> 00:11:40,940
informix planets and then i might expect

308
00:11:45,340 --> 00:11:43,339
to have to read infant composition

309
00:11:47,079 --> 00:11:45,350
den has dit forum for more localized

310
00:11:50,110 --> 00:11:47,089
in the disc becomes you still another

311
00:11:51,940 --> 00:11:50,120
possibility that remains open and do so again

312
00:11:53,920 --> 00:11:51,950
is with length image so imagination

313
00:11:56,230 --> 00:11:53,930

is database or plants definitely a soria

314

00:11:57,699 --> 00:11:56,240

above the formation historical and want to

315

00:11:59,710 --> 00:11:57,709

see like how well do this planet there

316

00:12:01,480 --> 00:11:59,720

assistance and magic him care

317

00:12:03,250 --> 00:12:01,490

populations and and try to make

318

00:12:04,569 --> 00:12:03,260

productions for making the compositions

319

00:12:06,040 --> 00:12:04,579

at leaseplan it

320

00:12:11,990 --> 00:12:06,050

thank you were my retention

321

00:12:14,720 --> 00:12:12,000

[Applause]

322

00:12:19,069 --> 00:12:14,730

thank you about two three minutes for

323

00:12:25,100 --> 00:12:22,250

the branch house in your simulations with

324

00:12:27,319 --> 00:12:25,110

your theme idea that the complete

325

00:12:29,569 --> 00:12:27,329

exoplanet on the creatures pushing osaka

326

00:12:32,569 --> 00:12:29,579

lyon the accu beef of your mode a

327

00:12:33,889 --> 00:12:32,579

logical camp education and counseling

328

00:12:40,069 --> 00:12:33,899

and

329

00:12:41,900 --> 00:12:40,079

would a condition an actor a

330

00:12:43,670 --> 00:12:41,910

straight calculation and and tryin to

331

00:12:45,110 --> 00:12:43,680

explain the population intent so the

332

00:12:47,420 --> 00:12:45,120

of forward modeling

333

00:12:49,730 --> 00:12:47,430

anyway does you how many planets per

334

00:12:51,980 --> 00:12:49,740

star usa for ever planet formation mans

335

00:12:53,540 --> 00:12:51,990

product to many clients or too few plan

336

00:12:55,819 --> 00:12:53,550

and speak and adjust out in the fitting

337

00:12:58,490 --> 00:12:55,829

position anyway go de nesten with of boys

338

00:13:00,560 --> 00:12:58,500

the underlying dan brooklands per star

339

00:13:02,930 --> 00:13:00,570

and should you chili higher than wat you have to

340

00:13:04,879 --> 00:13:02,940

complete their core great calculation

341

00:13:09,829 --> 00:13:04,889

because you go planet and simulation you

342

00:13:11,720 --> 00:13:09,839

die to you do so you will also plant

343

00:13:12,860 --> 00:13:11,730

great diversity in the ploter

344

00:13:14,600 --> 00:13:12,870

dash the shape

345

00:13:17,180 --> 00:13:14,610

the boards systems which also be more by

346

00:13:19,040 --> 00:13:17,190

these assumptions you are not in the

347

00:13:21,319 --> 00:13:19,050

label side is premacy is who she is in

348

00:13:22,730 --> 00:13:21,329

her march is the influence show final

349

00:13:25,460 --> 00:13:22,740

cumpilation

350

00:13:27,290 --> 00:13:25,470

cherso' abbonee like to refer you to

351
00:13:28,790 --> 00:13:27,300
talk van wilayah persekutuan google talk

352
00:13:30,530 --> 00:13:28,800
about en en

353
00:13:32,780 --> 00:13:30,540
basically the rising how to drive

354
00:13:35,000 --> 00:13:32,790
topdesk margins and will you riders want

355
00:13:37,309 --> 00:13:35,010
those first iso de de pladij show witsel

356
00:13:38,809 --> 00:13:37,319
is but they are functional stellar mesh

357
00:13:40,819 --> 00:13:38,819
oh so this must functional stella mesh

358
00:13:43,840 --> 00:13:40,829
and there is a large basically gathered

359
00:13:46,220 --> 00:13:43,850
from that relation and and error sun

360
00:13:50,269 --> 00:13:46,230
beige commerce in from

361
00:13:52,160 --> 00:13:50,279
the flexion on surf to the so then the best

362
00:13:54,590 --> 00:13:52,170
mesh you have to either in toulouse samsom

363
00:13:55,939 --> 00:13:54,600

system uncertainty and boogie have

364

00:13:58,309 --> 00:13:55,949

some ideas

365

00:13:59,840 --> 00:13:58,319

we have die ds or or what highlighter

366

00:14:02,329 --> 00:13:59,850

are shirley's arms finches scaling

367

00:14:04,699 --> 00:14:02,339

relationship with cells massagerie robust one

368

00:14:07,730 --> 00:14:04,709

parent is sam and certainty and also

369

00:14:11,900 --> 00:14:07,740

reflected in the leaf x

370

00:14:14,150 --> 00:14:11,910

when issue he is so wins in ipad mini

371

00:14:16,610 --> 00:14:14,160

machines katerina performance english

372

00:14:18,350 --> 00:14:16,620

duke in syria en in my goal is to change

373

00:14:20,600 --> 00:14:18,360

the current radio heaven earth evidence

374

00:14:22,250 --> 00:14:20,610

this pepsi's people with is scanner in vdm

375

00:14:23,600 --> 00:14:22,260

tours he are for you we in it

376

00:14:26,960 --> 00:14:23,610

hamidi from my effect

377

00:14:28,190 --> 00:14:26,970

drs at students far so the mikado'

378

00:14:30,380 --> 00:14:28,200

league action

379

00:14:31,250 --> 00:14:30,390

instability google trillions systems

380

00:14:34,790 --> 00:14:31,260

are

381

00:14:36,740 --> 00:14:34,800

yes and so who would offer gwenner planet and

382

00:14:38,330 --> 00:14:36,750

body simulations

383

00:14:40,010 --> 00:14:38,340

like for building drivers anyway

384

00:14:42,710 --> 00:14:40,020

then capture the gathering quite

385

00:14:45,170 --> 00:14:42,720

well so be sure not bad becomes forums so

386

00:14:47,660 --> 00:14:45,180

de nearby absurd and the mighty baby in n

387

00:14:49,790 --> 00:14:47,670

dish and as gathering face on nature

388

00:14:51,470 --> 00:14:49,800

it must be effective so care about

389

00:14:53,270 --> 00:14:51,480

the population level

390

00:14:55,100 --> 00:14:53,280

at the bookbinder thing to see if that's

391

00:14:56,900 --> 00:14:55,110

i modify my family is the the

392

00:14:58,490 --> 00:14:56,910

population state who do i have for my

393

00:15:05,480 --> 00:14:58,500

instagram of strictness of that

394

00:15:08,200 --> 00:15:07,370

we get so my friend and i speaker