



ASTRONOMICAL ANOMALIES

FOUND IN THE VASCO PROJECT

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**SOCIETY
FOR
SCIENTIFIC
EXPLORATION**

1
00:00:08,710 --> 00:00:06,630
what is the vanishing and appearance

2
00:00:10,549 --> 00:00:08,720
sources during a century of observations

3
00:00:11,589 --> 00:00:10,559
really about

4
00:00:14,549 --> 00:00:11,599
well

5
00:00:18,790 --> 00:00:14,559
let me be clear it's about et we want to

6
00:00:19,750 --> 00:00:18,800
find dt and et and extraterrestrials

7
00:00:21,670 --> 00:00:19,760
have been

8
00:00:23,269 --> 00:00:21,680
the motivator for

9
00:00:25,029 --> 00:00:23,279
uh our searches

10
00:00:27,029 --> 00:00:25,039
although we don't only do searches for

11
00:00:29,269 --> 00:00:27,039
et we we have a little bit of this

12
00:00:31,669 --> 00:00:29,279
policy of that whatever we find we will

13
00:00:33,510 --> 00:00:31,679

publish even if it's conventional

14

00:00:36,150 --> 00:00:33,520

astronomical phenomena we will publish

15

00:00:39,750 --> 00:00:38,229

so traditionally

16

00:00:40,950 --> 00:00:39,760

um

17

00:00:43,590 --> 00:00:40,960

there have been

18

00:00:44,389 --> 00:00:43,600

very few ways to look for et

19

00:00:45,830 --> 00:00:44,399

and

20

00:00:47,270 --> 00:00:45,840

people have been thinking so why should

21

00:00:49,110 --> 00:00:47,280

we look for them because we don't know

22

00:00:51,189 --> 00:00:49,120

if they exist we have we don't have any

23

00:00:53,430 --> 00:00:51,199

signature nothing that would indicate

24

00:00:55,510 --> 00:00:53,440

that any other civilization

25

00:00:58,470 --> 00:00:55,520

is out there well i'm just going to

26
00:01:01,110 --> 00:00:58,480
remind about that there are like 200 to

27
00:01:03,029 --> 00:01:01,120
300 billion of stars just in our milky

28
00:01:05,109 --> 00:01:03,039
way our own galaxy

29
00:01:07,590 --> 00:01:05,119
and there's about 400 billion galaxies

30
00:01:09,190 --> 00:01:07,600
just in the observable universe

31
00:01:11,350 --> 00:01:09,200
and we know that

32
00:01:11,910 --> 00:01:11,360
like

33
00:01:15,109 --> 00:01:11,920
it's maybe

34
00:01:18,310 --> 00:01:15,119
as much as 50 of all stellar systems

35
00:01:21,190 --> 00:01:18,320
have our earth like planets orbiting

36
00:01:24,310 --> 00:01:21,200
so we have very many candidate planets

37
00:01:28,469 --> 00:01:24,320
that could be um hosting some type of

38
00:01:30,149 --> 00:01:28,479

civilization or some more primitive life

39

00:01:32,710 --> 00:01:30,159

so i think there are good reasons to

40

00:01:33,990 --> 00:01:32,720

look for it

41

00:01:35,830 --> 00:01:34,000

traditionally

42

00:01:38,069 --> 00:01:35,840

most of these searches have been done in

43

00:01:40,390 --> 00:01:38,079

radio i don't know if many of you have

44

00:01:41,830 --> 00:01:40,400

seen this movie called contact that is a

45

00:01:44,149 --> 00:01:41,840

wonderful movie

46

00:01:46,789 --> 00:01:44,159

about a researcher that is looking for

47

00:01:49,749 --> 00:01:46,799

et with a radio telescope

48

00:01:51,990 --> 00:01:49,759

it's a great method except for

49

00:01:53,749 --> 00:01:52,000

that it's very very costly because you

50

00:01:55,350 --> 00:01:53,759

need to

51
00:01:57,830 --> 00:01:55,360
search for or

52
00:01:59,990 --> 00:01:57,840
you need to observe the same star during

53
00:02:01,109 --> 00:02:00,000
years and years

54
00:02:02,389 --> 00:02:01,119
of time

55
00:02:03,990 --> 00:02:02,399
and you don't know which one of all

56
00:02:05,670 --> 00:02:04,000
these stars that you're looking for is

57
00:02:06,950 --> 00:02:05,680
going to actually cost that life that

58
00:02:10,550 --> 00:02:06,960
intelligent life that could be

59
00:02:11,990 --> 00:02:10,560
transmitting clear-cut radio signals

60
00:02:13,110 --> 00:02:12,000
now there are other ways of doing that

61
00:02:14,390 --> 00:02:13,120
too

62
00:02:16,390 --> 00:02:14,400
for instance

63
00:02:19,670 --> 00:02:16,400

anomalies and when you search for

64

00:02:21,670 --> 00:02:19,680

anomalies you might actually not find it

65

00:02:24,740 --> 00:02:21,680

but you might find something else

66

00:02:25,990 --> 00:02:24,750

let's say when one first and discovered

67

00:02:29,589 --> 00:02:26,000

[Music]

68

00:02:33,110 --> 00:02:29,599

the first quasar is the 3c 273 that is

69

00:02:35,589 --> 00:02:33,120

here depicted on the image in the middle

70

00:02:37,830 --> 00:02:35,599

so a quasar is a supermassive black hole

71

00:02:39,910 --> 00:02:37,840

that is accreting lots of gas and emits

72

00:02:41,910 --> 00:02:39,920

lots lots of luminous

73

00:02:42,869 --> 00:02:41,920

um very very strong light from the

74

00:02:45,110 --> 00:02:42,879

center

75

00:02:46,470 --> 00:02:45,120

and when one first saw it once one

76
00:02:48,630 --> 00:02:46,480
thought it was a star and then one

77
00:02:50,390 --> 00:02:48,640
started taking a spectre of the star i

78
00:02:51,910 --> 00:02:50,400
said something is wrong with this star

79
00:02:53,030 --> 00:02:51,920
this star looks like it's not in our

80
00:02:55,430 --> 00:02:53,040
galaxy

81
00:02:57,430 --> 00:02:55,440
and this is how finding an anomaly led

82
00:03:00,309 --> 00:02:57,440
to a really important discovery we

83
00:03:01,830 --> 00:03:00,319
discovered these super accreting black

84
00:03:03,190 --> 00:03:01,840
holes

85
00:03:04,949 --> 00:03:03,200
in this way

86
00:03:07,430 --> 00:03:04,959
so that's one example

87
00:03:09,110 --> 00:03:07,440
another example is that the one one

88
00:03:11,589 --> 00:03:09,120

discovered the posters

89

00:03:13,670 --> 00:03:11,599

uh in astronomy one first thought

90

00:03:15,830 --> 00:03:13,680

this this looks like aliens someone said

91

00:03:18,470 --> 00:03:15,840

because it looks like periodic radio

92

00:03:19,270 --> 00:03:18,480

signals coming from these weird stars

93

00:03:20,949 --> 00:03:19,280

and

94

00:03:23,750 --> 00:03:20,959

well one discovered a new type of

95

00:03:25,430 --> 00:03:23,760

objects it wasn't easy the time either

96

00:03:28,229 --> 00:03:25,440

but it was super interesting and it led

97

00:03:30,550 --> 00:03:28,239

to a nobel prize

98

00:03:32,710 --> 00:03:30,560

and another object you might have read a

99

00:03:35,509 --> 00:03:32,720

lot about in the media is tabistar which

100

00:03:37,350 --> 00:03:35,519

is a star that has been doing some weird

101
00:03:38,710 --> 00:03:37,360
very slow type of dimming in the last

102
00:03:40,149 --> 00:03:38,720
hundred years

103
00:03:41,670 --> 00:03:40,159
and so far

104
00:03:44,470 --> 00:03:41,680
nobody knows what is causing this

105
00:03:48,149 --> 00:03:44,480
dimming really one thing is some type of

106
00:03:49,589 --> 00:03:48,159
dust but when it was discovered in 2016

107
00:03:51,430 --> 00:03:49,599
the first thought was

108
00:03:54,149 --> 00:03:51,440
could it be some type of mega structure

109
00:03:55,030 --> 00:03:54,159
some big alien structures

110
00:04:01,429 --> 00:03:55,040
like

111
00:04:03,990 --> 00:04:01,439
we don't know yet but

112
00:04:07,030 --> 00:04:04,000
we are still going to find out no

113
00:04:08,630 --> 00:04:07,040

signal of et has been found there yet

114

00:04:11,270 --> 00:04:08,640

and finally i think many of you have

115

00:04:12,949 --> 00:04:11,280

heard about the omoamoia object

116

00:04:14,710 --> 00:04:12,959

that

117

00:04:16,150 --> 00:04:14,720

has been figuring a lot in the media in

118

00:04:18,229 --> 00:04:16,160

the last two years

119

00:04:19,909 --> 00:04:18,239

uh where some people

120

00:04:22,950 --> 00:04:19,919

propose that this could actually be a

121

00:04:24,550 --> 00:04:22,960

space rocket and not a natural object

122

00:04:27,030 --> 00:04:24,560

and uh

123

00:04:28,710 --> 00:04:27,040

we again ask is it aliens it might be so

124

00:04:30,870 --> 00:04:28,720

that it's aliens this time or it will

125

00:04:33,510 --> 00:04:30,880

turn out to be some type of new anomaly

126

00:04:36,870 --> 00:04:33,520

that we will learn from so looking for

127

00:04:38,790 --> 00:04:36,880

anomalies is our really good start

128

00:04:40,950 --> 00:04:38,800

and even if we don't find it we can find

129

00:04:43,830 --> 00:04:40,960

something else

130

00:04:45,350 --> 00:04:43,840

so now in the vasco project we are

131

00:04:47,270 --> 00:04:45,360

interested in

132

00:04:48,629 --> 00:04:47,280

anomalies but we are not only interested

133

00:04:50,710 --> 00:04:48,639

in anomalies

134

00:04:52,230 --> 00:04:50,720

uh we were thinking about that how about

135

00:04:53,909 --> 00:04:52,240

if you look for something that would be

136

00:04:55,350 --> 00:04:53,919

absolutely impossible

137

00:04:57,510 --> 00:04:55,360

something that would look like magic in

138

00:05:00,070 --> 00:04:57,520

in the eyes of us physicists that would

139

00:05:01,110 --> 00:05:00,080

say like no that cannot happen naturally

140

00:05:03,110 --> 00:05:01,120

and

141

00:05:04,710 --> 00:05:03,120

maybe we can target our searches to look

142

00:05:05,590 --> 00:05:04,720

for this magic

143

00:05:08,070 --> 00:05:05,600

in

144

00:05:10,629 --> 00:05:08,080

big sets of data

145

00:05:12,870 --> 00:05:10,639

because if you find something you either

146

00:05:15,189 --> 00:05:12,880

find a new astrophysical phenomena that

147

00:05:17,430 --> 00:05:15,199

will kill some dogma and you're happy

148

00:05:20,150 --> 00:05:17,440

or you actually might find that

149

00:05:22,390 --> 00:05:20,160

technology that you're looking for

150

00:05:24,629 --> 00:05:22,400

and this is is the basics for the vasco

151
00:05:27,189 --> 00:05:24,639
project where we are actually focusing

152
00:05:29,189 --> 00:05:27,199
our searches on vanishing stars

153
00:05:30,310 --> 00:05:29,199
because we know that if a star dies

154
00:05:33,110 --> 00:05:30,320
either it

155
00:05:35,909 --> 00:05:33,120
like explodes in a bright supernova or

156
00:05:36,710 --> 00:05:35,919
it's during billions of years fades into

157
00:05:46,310 --> 00:05:36,720
a

158
00:05:49,909 --> 00:05:46,320
collection

159
00:05:51,749 --> 00:05:49,919
we're comparing images from the 1950s

160
00:05:53,990 --> 00:05:51,759
before any satellites were in the sky

161
00:05:56,390 --> 00:05:54,000
when our sky was completely without any

162
00:05:58,950 --> 00:05:56,400
human contamination we compared these

163
00:06:00,309 --> 00:05:58,960

images from the 50s with images from how

164

00:06:02,309 --> 00:06:00,319

how the star

165

00:06:05,110 --> 00:06:02,319

the sky looks today

166

00:06:07,189 --> 00:06:05,120

and we collect all this data we look we

167

00:06:09,270 --> 00:06:07,199

compare the images and

168

00:06:11,909 --> 00:06:09,280

the catalogs and we see has something

169

00:06:13,909 --> 00:06:11,919

vanished possibly

170

00:06:15,590 --> 00:06:13,919

and with that we are actually finding a

171

00:06:18,070 --> 00:06:15,600

lot of natural objects

172

00:06:19,909 --> 00:06:18,080

natural so-called transients transient

173

00:06:23,189 --> 00:06:19,919

is a transit is an event that is very

174

00:06:24,629 --> 00:06:23,199

short in astronomy let's say a supernova

175

00:06:26,870 --> 00:06:24,639

or um

176
00:06:28,469 --> 00:06:26,880
so-called gamma reverse sun something

177
00:06:29,749 --> 00:06:28,479
that lasts for just a few minutes and

178
00:06:31,510 --> 00:06:29,759
you see it

179
00:06:34,950 --> 00:06:31,520
so we collect a lot of natural

180
00:06:36,550 --> 00:06:34,960
transients by by doing this and we also

181
00:06:41,350 --> 00:06:36,560
collect a lot of

182
00:06:43,189 --> 00:06:41,360
transients let's say quasars that are

183
00:06:45,990 --> 00:06:43,199
having some type of variability that can

184
00:06:47,510 --> 00:06:46,000
last for years

185
00:06:49,110 --> 00:06:47,520
so these are the natural things that we

186
00:06:52,469 --> 00:06:49,120
collect but we also

187
00:06:54,870 --> 00:06:52,479
hope to find so-called dyson spheres

188
00:06:56,790 --> 00:06:54,880

um around stars where let's say a

189

00:06:59,990 --> 00:06:56,800

civilization might have built a shell

190

00:07:02,070 --> 00:07:00,000

around the star and gradually it themes

191

00:07:03,990 --> 00:07:02,080

and we hope to find maybe some vanishing

192

00:07:05,749 --> 00:07:04,000

star that has been

193

00:07:09,029 --> 00:07:05,759

um manipulated through stellar

194

00:07:10,309 --> 00:07:09,039

engineering or even appearing stars

195

00:07:12,710 --> 00:07:10,319

i i'm

196

00:07:15,350 --> 00:07:12,720

i'm very proud of to say that this image

197

00:07:17,029 --> 00:07:15,360

of the green little

198

00:07:19,110 --> 00:07:17,039

aliens was actually published in an

199

00:07:21,270 --> 00:07:19,120

astronomical journal i never expected it

200

00:07:26,309 --> 00:07:21,280

to happen but we got it published with

201
00:07:32,070 --> 00:07:28,870
so yes this is what we all are looking

202
00:07:34,309 --> 00:07:32,080
for and we collect all of this stuff and

203
00:07:38,629 --> 00:07:34,319
we hope that to eventually find this

204
00:07:43,670 --> 00:07:39,909
so

205
00:07:46,230 --> 00:07:43,680
scientific opportunities yes there are

206
00:07:49,270 --> 00:07:46,240
some people who say that according to a

207
00:07:51,430 --> 00:07:49,280
few theories certain stars within a very

208
00:07:53,270 --> 00:07:51,440
defined mass range might collapse

209
00:07:54,790 --> 00:07:53,280
directly into black holes

210
00:07:55,990 --> 00:07:54,800
nobody knows if these theories are

211
00:07:58,070 --> 00:07:56,000
correct

212
00:08:00,550 --> 00:07:58,080
and we know that it's extremely unlikely

213
00:08:01,350 --> 00:08:00,560

that it will happen in the milky way

214

00:08:05,110 --> 00:08:01,360

so

215

00:08:07,749 --> 00:08:05,120

be equally cool for us as well because

216

00:08:08,950 --> 00:08:07,759

that would um bring a lot of light to

217

00:08:11,029 --> 00:08:08,960

supernova

218

00:08:13,029 --> 00:08:11,039

physics

219

00:08:15,029 --> 00:08:13,039

and as i also mentioned the quasars

220

00:08:17,270 --> 00:08:15,039

which is my other research field

221

00:08:18,309 --> 00:08:17,280

and these super massive accreting black

222

00:08:19,270 --> 00:08:18,319

holes

223

00:08:21,350 --> 00:08:19,280

um

224

00:08:23,110 --> 00:08:21,360

one can also find some of them that show

225

00:08:27,990 --> 00:08:23,120

long-term variability

226

00:08:30,070 --> 00:08:28,000

things would be fantastic in order to

227

00:08:32,310 --> 00:08:30,080

actually know

228

00:08:34,550 --> 00:08:32,320

like dismiss and reject a lot of

229

00:08:36,230 --> 00:08:34,560

current theories about

230

00:08:37,589 --> 00:08:36,240

the engine of the quasars because i can

231

00:08:41,269 --> 00:08:37,599

say that there's a very poor

232

00:08:43,670 --> 00:08:41,279

understanding of the engine so far so

233

00:08:47,030 --> 00:08:43,680

even if we find this we will do

234

00:08:50,070 --> 00:08:47,040

we will get something nice out of it

235

00:08:52,070 --> 00:08:50,080

so our first official paper there was

236

00:08:52,829 --> 00:08:52,080

one more earlier but the official paper

237

00:08:57,269 --> 00:08:52,839

was in

238

00:08:59,269 --> 00:08:57,279

2020 and we found 150 000 candidates

239

00:09:01,670 --> 00:08:59,279

just based on the text

240

00:09:03,750 --> 00:09:01,680

and catalogues

241

00:09:05,910 --> 00:09:03,760

and the problem was that with these 150

242

00:09:08,550 --> 00:09:05,920

000 of images one had to look through

243

00:09:11,110 --> 00:09:08,560

them one by one by eye

244

00:09:13,670 --> 00:09:11,120

looking through 150 000 images by eye is

245

00:09:15,990 --> 00:09:13,680

not an easy task i looked through 24 000

246

00:09:18,550 --> 00:09:16,000

it took three months lots of chocolates

247

00:09:19,990 --> 00:09:18,560

i lost one and i i got one dietary more

248

00:09:21,350 --> 00:09:20,000

in my

249

00:09:22,949 --> 00:09:21,360

myopia

250

00:09:26,870 --> 00:09:22,959

and

251
00:09:29,910 --> 00:09:26,880
what we when i looked through 24 000 of

252
00:09:31,590 --> 00:09:29,920
objects i found 100 unusual transients

253
00:09:33,590 --> 00:09:31,600
that were very short

254
00:09:36,790 --> 00:09:33,600
and i did not find any clear candidate

255
00:09:39,590 --> 00:09:36,800
of a vanishing star so far but

256
00:09:41,350 --> 00:09:39,600
um it was an interesting start

257
00:09:43,670 --> 00:09:41,360
here i show examples of the things that

258
00:09:44,790 --> 00:09:43,680
i found when i look through the 24 000

259
00:09:46,389 --> 00:09:44,800
of the

260
00:09:48,230 --> 00:09:46,399
candidates

261
00:09:50,870 --> 00:09:48,240
you see here are beautiful

262
00:09:53,990 --> 00:09:50,880
objects in the image from the 1950 this

263
00:09:55,430 --> 00:09:54,000

is a red image and it's not there later

264

00:09:57,030 --> 00:09:55,440

this is another

265

00:10:00,470 --> 00:09:57,040

time in the 80s

266

00:10:02,949 --> 00:10:00,480

here we have it in 2005 and 2015. so you

267

00:10:05,910 --> 00:10:02,959

only see that event in

268

00:10:08,470 --> 00:10:07,509

here's another example you see something

269

00:10:11,190 --> 00:10:08,480

here

270

00:10:13,590 --> 00:10:11,200

in the 50s you don't see it as much but

271

00:10:17,350 --> 00:10:13,600

it still is seen in the 80s

272

00:10:21,350 --> 00:10:19,670

and hundreds of these type of

273

00:10:23,190 --> 00:10:21,360

events were found

274

00:10:25,350 --> 00:10:23,200

and we think that they are

275

00:10:27,030 --> 00:10:25,360

natural astrophysical phenomena although

276
00:10:30,710 --> 00:10:27,040
we don't know yet what they are because

277
00:10:31,829 --> 00:10:30,720
we need to do follow-up observations

278
00:10:33,910 --> 00:10:31,839
and

279
00:10:35,910 --> 00:10:33,920
to explore all the other ones we started

280
00:10:37,829 --> 00:10:35,920
up a citizen science projects and that

281
00:10:39,590 --> 00:10:37,839
was has has been done together with

282
00:10:42,550 --> 00:10:39,600
machine learning scientists

283
00:10:45,110 --> 00:10:42,560
image analysis researchers actually

284
00:10:47,590 --> 00:10:45,120
game developers and astronomers

285
00:10:49,350 --> 00:10:47,600
and we have introduced the first 150 000

286
00:10:52,630 --> 00:10:49,360
of candidates that were purely based on

287
00:10:56,069 --> 00:10:54,069
so

288
00:10:58,710 --> 00:10:56,079

here is how it looks and if you want to

289

00:11:01,110 --> 00:10:58,720

see the citizen science project you can

290

00:11:04,310 --> 00:11:01,120

go here it has a random number generator

291

00:11:05,670 --> 00:11:04,320

currently that is spitting out a mission

292

00:11:07,430 --> 00:11:05,680

number and

293

00:11:09,590 --> 00:11:07,440

there's also an ai

294

00:11:12,389 --> 00:11:09,600

and eventually the ai is supposed to

295

00:11:14,790 --> 00:11:12,399

replace the random number generator once

296

00:11:17,590 --> 00:11:14,800

it has trained enough on enough many

297

00:11:20,790 --> 00:11:18,389

and

298

00:11:23,430 --> 00:11:20,800

in order to do the projects even more

299

00:11:25,590 --> 00:11:23,440

interesting we are collaborating with

300

00:11:27,350 --> 00:11:25,600

several schools in institutes and

301

00:11:30,230 --> 00:11:27,360

amateur associations

302

00:11:32,230 --> 00:11:30,240

um with in african countries in

303

00:11:33,509 --> 00:11:32,240

particular in nigeria cameroon and

304

00:11:35,509 --> 00:11:33,519

algeria

305

00:11:37,590 --> 00:11:35,519

and we hope to implement the vasco

306

00:11:39,350 --> 00:11:37,600

project as a part of the education there

307

00:11:41,910 --> 00:11:39,360

so that we know that even if we don't

308

00:11:42,949 --> 00:11:41,920

find et we hope that we can inspire many

309

00:11:45,670 --> 00:11:42,959

of these

310

00:11:49,190 --> 00:11:45,680

young african astronomers astronomers

311

00:11:53,590 --> 00:11:52,310

so that's a side thing we do

312

00:11:56,790 --> 00:11:53,600

so far

313

00:11:58,870 --> 00:11:56,800

out of the 150 000 objects we have 114

314

00:12:00,790 --> 00:11:58,880

000 classifications

315

00:12:02,470 --> 00:12:00,800

and you can see here a timeline when it

316

00:12:05,350 --> 00:12:02,480

started when the project started last

317

00:12:07,509 --> 00:12:05,360

year it started very slowly then things

318

00:12:09,430 --> 00:12:07,519

started being a little bit more visible

319

00:12:11,269 --> 00:12:09,440

then i gave a talk at the seti institute

320

00:12:13,590 --> 00:12:11,279

and you see a big peak here

321

00:12:17,350 --> 00:12:13,600

well it

322

00:12:19,670 --> 00:12:17,360

right now we have 1 800 candidates

323

00:12:22,949 --> 00:12:19,680

roughly that are marked as vanished that

324

00:12:24,710 --> 00:12:22,959

we have to look through and double check

325

00:12:26,790 --> 00:12:24,720

so that's the status of our citizen

326

00:12:29,190 --> 00:12:26,800

science project we actually also have

327

00:12:30,230 --> 00:12:29,200

automatized searches and by the end of

328

00:12:33,030 --> 00:12:30,240

september

329

00:12:35,430 --> 00:12:33,040

we will have a automatized answer to

330

00:12:37,190 --> 00:12:35,440

whether there are any vanishing stars

331

00:12:38,949 --> 00:12:37,200

so it's all happening right now all the

332

00:12:41,910 --> 00:12:38,959

results are coming in in the last months

333

00:12:43,110 --> 00:12:41,920

and it's very exciting

334

00:12:43,990 --> 00:12:43,120

so

335

00:12:51,350 --> 00:12:44,000

we

336

00:12:53,190 --> 00:12:51,360

and that is actually what i mainly would

337

00:12:54,069 --> 00:12:53,200

like to tell you about

338

00:12:55,829 --> 00:12:54,079

so

339

00:12:57,590 --> 00:12:55,839

this is a paper that was published two

340

00:13:00,310 --> 00:12:57,600

months ago

341

00:13:01,590 --> 00:13:00,320

in nature's scientific reports

342

00:13:03,040 --> 00:13:01,600

and

343

00:13:04,389 --> 00:13:03,050

the paper got

344

00:13:06,870 --> 00:13:04,399

[Music]

345

00:13:08,790 --> 00:13:06,880

a lot of both

346

00:13:11,190 --> 00:13:08,800

unusual attention we can say it like

347

00:13:12,150 --> 00:13:11,200

that due to several factors

348

00:13:13,910 --> 00:13:12,160

and

349

00:13:16,069 --> 00:13:13,920

there were some cancelling on social

350

00:13:18,069 --> 00:13:16,079

media and there were some

351
00:13:21,110 --> 00:13:18,079
very excited astronomers it really

352
00:13:23,190 --> 00:13:21,120
lifted all kind of emotions

353
00:13:24,790 --> 00:13:23,200
and

354
00:13:28,069 --> 00:13:24,800
it's called exploring nine

355
00:13:30,069 --> 00:13:28,079
simultaneously occurring transients

356
00:13:31,350 --> 00:13:30,079
i'm going to show you an image

357
00:13:32,829 --> 00:13:31,360
you see here

358
00:13:35,990 --> 00:13:32,839
and

359
00:13:38,710 --> 00:13:36,000
nine well it's basically

360
00:13:40,949 --> 00:13:38,720
nine objects

361
00:13:42,550 --> 00:13:40,959
it looks like normal stars let me show a

362
00:13:44,150 --> 00:13:42,560
little bit clearer

363
00:13:46,230 --> 00:13:44,160

uh like if you look at the light

364

00:13:49,189 --> 00:13:46,240

profiles of these objects the black one

365

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

is of a typical normal star how the

366

00:13:52,550 --> 00:13:51,199

brightness falls off

367

00:13:55,590 --> 00:13:52,560

as a measure of the distance from the

368

00:13:58,230 --> 00:13:55,600

center and all these objects just look

369

00:13:59,990 --> 00:13:58,240

like normal stars

370

00:14:02,310 --> 00:14:00,000

now if you have

371

00:14:03,430 --> 00:14:02,320

a very like careful look you're going to

372

00:14:06,389 --> 00:14:03,440

discover

373

00:14:13,350 --> 00:14:08,310

that there's a tiny problem

374

00:14:17,509 --> 00:14:15,269

they were there in 1950 they are no

375

00:14:19,910 --> 00:14:17,519

longer there in 1996 and this is a small

376

00:14:21,670 --> 00:14:19,920

region of the sky

377

00:14:24,150 --> 00:14:21,680

i actually unfortunately included some

378

00:14:26,069 --> 00:14:24,160

digita this is actually i haven't marked

379

00:14:27,829 --> 00:14:26,079

it here but this is not a real star

380

00:14:30,310 --> 00:14:27,839

unfortunately and neither are those

381

00:14:31,990 --> 00:14:30,320

these are digital uh scanning artifacts

382

00:14:33,509 --> 00:14:32,000

i forgot to mark them

383

00:14:36,069 --> 00:14:33,519

sorry for that

384

00:14:40,470 --> 00:14:36,079

anyway nine of these objects are there

385

00:14:43,110 --> 00:14:40,480

in 1950 but not in 1996.

386

00:14:45,110 --> 00:14:43,120

and if you start comparing you see that

387

00:14:47,189 --> 00:14:45,120

six days later these nine objects

388

00:14:49,110 --> 00:14:47,199

weren't there and you if you look at it

389

00:14:50,069 --> 00:14:49,120

half an hour earlier they also weren't

390

00:14:53,110 --> 00:14:50,079

there

391

00:14:54,069 --> 00:14:53,120

which is really really weird

392

00:14:55,110 --> 00:14:54,079

so

393

00:14:58,230 --> 00:14:55,120

we first

394

00:14:59,910 --> 00:14:58,240

as a first intuitive exploration we use

395

00:15:02,790 --> 00:14:59,920

the grand telescopic canaries which is a

396

00:15:04,550 --> 00:15:02,800

10.4 meter telescope trying to see okay

397

00:15:05,990 --> 00:15:04,560

if there were stars there

398

00:15:08,069 --> 00:15:06,000

have they possibly vanished is there

399

00:15:10,870 --> 00:15:08,079

something at the spot

400

00:15:12,550 --> 00:15:10,880

and we got really deep images

401
00:15:14,629 --> 00:15:12,560
for some things we found something on

402
00:15:16,629 --> 00:15:14,639
the place for others not

403
00:15:19,030 --> 00:15:16,639
and we kind of looked at this to this

404
00:15:21,509 --> 00:15:19,040
gtc you see here there are much higher

405
00:15:23,509 --> 00:15:21,519
resolution images that are modern

406
00:15:24,949 --> 00:15:23,519
70 years later

407
00:15:27,990 --> 00:15:24,959
and

408
00:15:29,350 --> 00:15:28,000
we kind of concluded that

409
00:15:30,790 --> 00:15:29,360
maybe

410
00:15:32,550 --> 00:15:30,800
those that had some kind of counter

411
00:15:34,710 --> 00:15:32,560
posture were just chance projections it

412
00:15:36,550 --> 00:15:34,720
could be that it was just if you if you

413
00:15:38,310 --> 00:15:36,560

have a really

414

00:15:40,310 --> 00:15:38,320

high resolution images you will always

415

00:15:42,069 --> 00:15:40,320

find some type of some background stars

416

00:15:43,430 --> 00:15:42,079

it doesn't mean that they are physically

417

00:15:45,350 --> 00:15:43,440

connected

418

00:15:49,350 --> 00:15:45,360

so we suddenly have a problem what are

419

00:15:52,550 --> 00:15:50,310

and

420

00:15:54,550 --> 00:15:52,560

we have taken a look at astrophysical

421

00:15:57,189 --> 00:15:54,560

reasons and there's absolutely not a

422

00:16:00,069 --> 00:15:57,199

single astrophysics physical explanation to

423

00:16:01,749 --> 00:16:00,079

having so many of transients that happen

424

00:16:04,230 --> 00:16:01,759

in a small region of the sky at the same

425

00:16:06,310 --> 00:16:04,240

time there's just no way

426
00:16:09,430 --> 00:16:06,320
pure astrophysically because the density

427
00:16:11,269 --> 00:16:09,440
is too high

428
00:16:12,790 --> 00:16:11,279
and so we started looking at different

429
00:16:14,949 --> 00:16:12,800
instrumental issues we were thinking

430
00:16:17,189 --> 00:16:14,959
could it be that the images have a

431
00:16:18,790 --> 00:16:17,199
different spectral sensitivity but no

432
00:16:21,110 --> 00:16:18,800
because we actually had

433
00:16:22,790 --> 00:16:21,120
we could compare it with the image taken

434
00:16:24,710 --> 00:16:22,800
with the same instrumentation 16 minutes

435
00:16:27,670 --> 00:16:24,720
later we're wondering it could be some

436
00:16:30,150 --> 00:16:27,680
type of ghost image no because the

437
00:16:31,829 --> 00:16:30,160
stars had just two perfects and

438
00:16:33,749 --> 00:16:31,839

brightness profiles

439

00:16:35,590 --> 00:16:33,759

could it be a double exposure we did a

440

00:16:37,269 --> 00:16:35,600

few tests and it seems we cannot exclude

441

00:16:38,470 --> 00:16:37,279

it but it seems quite unlikely or very

442

00:16:40,470 --> 00:16:38,480

unlikely

443

00:16:42,949 --> 00:16:40,480

emotion problems again we have the

444

00:16:44,629 --> 00:16:42,959

problem of that all these objects have

445

00:16:47,269 --> 00:16:44,639

very star-like

446

00:16:49,430 --> 00:16:47,279

um profiles now again it should be nine

447

00:16:51,269 --> 00:16:49,440

star-like defects not twelve because we

448

00:16:53,350 --> 00:16:51,279

found out later that's three out of 12

449

00:16:55,749 --> 00:16:53,360

were scanning artifacts

450

00:16:57,670 --> 00:16:55,759

cosmic rays they are not a problem for

451
00:17:01,269 --> 00:16:57,680
photographic plates in the same way as

452
00:17:02,069 --> 00:17:01,279
they are for modern ccds

453
00:17:06,630 --> 00:17:02,079
so

454
00:17:08,470 --> 00:17:06,640
another like

455
00:17:11,110 --> 00:17:08,480
and so then we started getting more

456
00:17:14,710 --> 00:17:11,120
desperate our referee asked could it be

457
00:17:17,029 --> 00:17:14,720
that someone sneezed on the plates

458
00:17:20,390 --> 00:17:17,039
so then we had i had to open some kobe

459
00:17:22,710 --> 00:17:20,400
19 articles look at the

460
00:17:25,829 --> 00:17:22,720
other profiles of um

461
00:17:28,309 --> 00:17:25,839
of water and saliva and you see that

462
00:17:30,070 --> 00:17:28,319
saliva does not give perfect round

463
00:17:32,310 --> 00:17:30,080

shapes as you can see here they give

464

00:17:34,789 --> 00:17:32,320

elongated forms and all kinds of things

465

00:17:37,110 --> 00:17:34,799

different distributions of sizes no

466

00:17:39,029 --> 00:17:37,120

nobody sneeze on the blades

467

00:17:39,909 --> 00:17:39,039

so we now call it

468

00:17:42,310 --> 00:17:39,919

um

469

00:17:44,390 --> 00:17:42,320

unknown condemnation

470

00:17:46,470 --> 00:17:44,400

one hypothesis that we had is that it

471

00:17:48,470 --> 00:17:46,480

could be nuclear fallout

472

00:17:50,789 --> 00:17:48,480

because nuclear fallout can give

473

00:17:52,390 --> 00:17:50,799

actually these beautiful round spots on

474

00:17:54,950 --> 00:17:52,400

x-ray film

475

00:17:57,190 --> 00:17:54,960

now i don't know if the red emotions

476
00:17:58,789 --> 00:17:57,200
from the 1950s were sensitive to the

477
00:18:00,789 --> 00:17:58,799
x-ray film

478
00:18:04,150 --> 00:18:00,799
there's just one problem

479
00:18:07,510 --> 00:18:04,160
um in the place where the the pal at the

480
00:18:09,669 --> 00:18:07,520
in the region um um it's called near the

481
00:18:12,310 --> 00:18:09,679
palomar observatory there were no

482
00:18:14,789 --> 00:18:12,320
nuclear bomb tests actually after in

483
00:18:16,950 --> 00:18:14,799
general in u.s one didn't do any nuclear

484
00:18:18,870 --> 00:18:16,960
bomb tests in that year

485
00:18:20,549 --> 00:18:18,880
and 199

486
00:18:23,669 --> 00:18:20,559
there were no official bomb tests

487
00:18:25,029 --> 00:18:23,679
between 1949 to 1951

488
00:18:26,830 --> 00:18:25,039

and

489

00:18:29,750 --> 00:18:26,840

so one can of course question whether

490

00:18:31,430 --> 00:18:29,760

the yeah well the official lists are

491

00:18:33,350 --> 00:18:31,440

complete or not

492

00:18:35,510 --> 00:18:33,360

and the second problem is of course also

493

00:18:36,470 --> 00:18:35,520

that we are seeing more of these events

494

00:18:38,549 --> 00:18:36,480

in a

495

00:18:40,070 --> 00:18:38,559

confined region of the photographic

496

00:18:41,669 --> 00:18:40,080

plates

497

00:18:43,110 --> 00:18:41,679

while maybe this contamination from

498

00:18:44,470 --> 00:18:43,120

nuclear pumps would have been all over

499

00:18:46,230 --> 00:18:44,480

the place

500

00:18:47,590 --> 00:18:46,240

so

501
00:18:50,070 --> 00:18:47,600
i don't know

502
00:18:52,630 --> 00:18:50,080
we call it that it might be some type

503
00:18:53,990 --> 00:18:52,640
unknown type of contamination

504
00:18:56,070 --> 00:18:54,000
however

505
00:18:57,990 --> 00:18:56,080
we also started thinking of a different

506
00:18:59,510 --> 00:18:58,000
possibility

507
00:19:01,669 --> 00:18:59,520
if you would use exactly the same

508
00:19:03,110 --> 00:19:01,679
instrumentation today

509
00:19:06,310 --> 00:19:03,120
and uh

510
00:19:07,510 --> 00:19:06,320
like same instrumentation and look uh at

511
00:19:09,350 --> 00:19:07,520
the sky

512
00:19:11,029 --> 00:19:09,360
you actually could find this type of

513
00:19:12,789 --> 00:19:11,039

multiple transitions

514

00:19:14,070 --> 00:19:12,799

in a small region you would find it

515

00:19:15,830 --> 00:19:14,080

quite often

516

00:19:19,430 --> 00:19:15,840

and why is it so well because today we

517

00:19:20,950 --> 00:19:19,440

had we have a lot of satellites a lot of

518

00:19:22,870 --> 00:19:20,960

space debris

519

00:19:25,270 --> 00:19:22,880

in fact most of the times when you think

520

00:19:27,830 --> 00:19:25,280

that you observe a very fast flash from

521

00:19:29,750 --> 00:19:27,840

the sky it's just a solar reflection of

522

00:19:32,310 --> 00:19:29,760

a satellite or debris

523

00:19:34,310 --> 00:19:32,320

and that comes from small it can be a

524

00:19:36,310 --> 00:19:34,320

small object even just

525

00:19:39,190 --> 00:19:36,320

centimeters or tens of centimeters in

526
00:19:41,909 --> 00:19:39,200
size and that create this very fast

527
00:19:43,750 --> 00:19:41,919
transient like events

528
00:19:46,549 --> 00:19:43,760
however

529
00:19:49,350 --> 00:19:46,559
um no glint should be observed before

530
00:19:51,669 --> 00:19:49,360
1963 when the first

531
00:19:54,070 --> 00:19:51,679
satellite was launched high enough to

532
00:19:57,029 --> 00:19:54,080
reach us geosynchronous orbits

533
00:19:59,270 --> 00:19:57,039
also the first satellite was in 1957

534
00:20:00,710 --> 00:19:59,280
so theoretically we shouldn't be able to

535
00:20:01,909 --> 00:20:00,720
observe this kind of

536
00:20:04,710 --> 00:20:01,919
events

537
00:20:06,789 --> 00:20:04,720
because our image is from 1950

538
00:20:08,549 --> 00:20:06,799

we still ask the question

539

00:20:10,950 --> 00:20:08,559

and uh which

540

00:20:12,549 --> 00:20:10,960

leads us to the kind of conclusion that

541

00:20:14,149 --> 00:20:12,559

we're either dealing with some type of

542

00:20:15,830 --> 00:20:14,159

unknown contamination that we couldn't

543

00:20:17,750 --> 00:20:15,840

at all pinpoint

544

00:20:20,390 --> 00:20:17,760

or possibly we are

545

00:20:22,789 --> 00:20:20,400

observing something that could

546

00:20:25,990 --> 00:20:22,799

indicate that some type of artificial

547

00:20:27,750 --> 00:20:26,000

objects in high orbit already in 1950

548

00:20:29,750 --> 00:20:27,760

in order to test the latter scenario

549

00:20:31,270 --> 00:20:29,760

we're going to look for

550

00:20:32,230 --> 00:20:31,280

this type of image is something that

551
00:20:35,510 --> 00:20:32,240
would be

552
00:20:37,590 --> 00:20:35,520
a much clearer signature of metal or

553
00:20:40,149 --> 00:20:37,600
glass or something reflective

554
00:20:42,789 --> 00:20:40,159
in these images in 1950

555
00:20:45,430 --> 00:20:42,799
and we are doing these touches right now

556
00:20:47,190 --> 00:20:45,440
i estimate that we will be we will have

557
00:20:49,430 --> 00:20:47,200
our answer within a few months since we

558
00:20:51,190 --> 00:20:49,440
already have all these citizen science

559
00:20:53,590 --> 00:20:51,200
results and all the results from the

560
00:20:55,909 --> 00:20:53,600
automatized sky scan

561
00:20:57,909 --> 00:20:55,919
since all of this is already

562
00:20:59,990 --> 00:20:57,919
well in progress to be finished it will

563
00:21:02,789 --> 00:21:00,000

just take a few months extra to search

564

00:21:04,950 --> 00:21:02,799

for this very clear signatures of metal

565

00:21:06,149 --> 00:21:04,960

in high orbits

566

00:21:08,870 --> 00:21:06,159

and

567

00:21:11,750 --> 00:21:08,880

with this i think i'm finishing the talk

568

00:21:13,990 --> 00:21:11,760

i have shown you our latest results from

569

00:21:17,590 --> 00:21:14,000

the vasco projects and

570

00:21:23,110 --> 00:21:17,600

our ongoing mystery and with the nine

571

00:21:27,270 --> 00:21:25,110

and for people who are

572

00:21:31,029 --> 00:21:27,280

excited about what astronomers can you

573

00:21:33,590 --> 00:21:31,039

do with ufos i have also recently joined

574

00:21:35,430 --> 00:21:33,600

abbey leups galileo projects

575

00:21:37,190 --> 00:21:35,440

that some of you might have heard about

576

00:21:38,310 --> 00:21:37,200

where they are planning to do a data

577

00:21:39,190 --> 00:21:38,320

driven

578

00:21:41,510 --> 00:21:39,200

uh

579

00:21:44,870 --> 00:21:41,520

and observational approach to searching

580

00:21:47,430 --> 00:21:44,880

for uaps and ufos