
HUBBLE
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HUBBLE
hangouts
Hubble Hangouts Live at AAS 225
#9: Meeting Recap
Wednesday, Jan 7, 2014, 4:30pm PST, 12:30am (Thu) UT, 1:30am (Thu) CET

1
00:00:07,039 --> 00:00:05,630
one hello everybody we're back it's only

2
00:00:09,049 --> 00:00:07,049
been eight minutes this would be the

3
00:00:10,580 --> 00:00:09,059
last one but we're back again I'm Tony

4
00:00:12,560 --> 00:00:10,590
Darnell organ space telescope sizes you

5
00:00:15,340 --> 00:00:12,570
and this is carol christian we're back

6
00:00:18,439 --> 00:00:15,350
doing a meeting recap of the double the

7
00:00:21,019 --> 00:00:18,449
225th meeting of the double-a s we're at

8
00:00:22,429 --> 00:00:21,029
our booth and we are doing a lot of

9
00:00:23,330 --> 00:00:22,439
things here at this meeting and one of

10
00:00:24,679 --> 00:00:23,340
the things we're doing its really

11
00:00:26,599 --> 00:00:24,689
interesting i have two members of the

12
00:00:28,759 --> 00:00:26,609
staff that the institute with me i have

13
00:00:30,349 --> 00:00:28,769

Tony Tony Rogers and Lee quick they're

14
00:00:32,420 --> 00:00:30,359
both working on something that I want to

15
00:00:35,479 --> 00:00:32,430
make you guys aware of because I know

16
00:00:38,479 --> 00:00:35,489
you want to get Hubble data and right

17
00:00:41,900 --> 00:00:38,489
now to do it you use the makoki Mikulski

18
00:00:43,910 --> 00:00:41,910
archive or space telescopes and that's

19
00:00:46,369 --> 00:00:43,920
right ma st right we call it mass and

20
00:00:49,100 --> 00:00:46,379
you get there with at mass dot stsci edu

21
00:00:52,279 --> 00:00:49,110
right yes and you type in things and you

22
00:00:53,869 --> 00:00:52,289
get data out but where but what Tony and

23
00:00:56,330 --> 00:00:53,879
Lee are here demonstrating at the

24
00:00:58,520 --> 00:00:56,340
meeting at the booth here this this week

25
00:01:01,580 --> 00:00:58,530
is a new interface that makes it easier

26
00:01:02,869 --> 00:01:01,590
for you to get Hubble data and so it's

27
00:01:05,149 --> 00:01:02,879
he's going to give us a quick

28
00:01:07,850 --> 00:01:05,159
demonstration of it and then we're going

29
00:01:10,640 --> 00:01:07,860
to follow up in February I believe with

30
00:01:12,710 --> 00:01:10,650
when Denise gets released with a longer

31
00:01:16,120 --> 00:01:12,720
hang out that really goes in-depth it

32
00:01:18,890 --> 00:01:16,130
shows you how to use it and get specific

33
00:01:21,140 --> 00:01:18,900
data sets out of the archive and it's

34
00:01:27,160 --> 00:01:21,150
not just Hubble is it it's also it's got

35
00:01:30,370 --> 00:01:27,170
Hubble GALEX iue fuse Kepler many others

36
00:01:32,960 --> 00:01:30,380
so it's a one-stop shop for all the

37
00:01:34,280 --> 00:01:32,970
visible and UV data that's in our

38
00:01:35,840 --> 00:01:34,290

holdings that's right and we've got

39
00:01:37,280 --> 00:01:35,850
other missions coming online as well in

40
00:01:38,569 --> 00:01:37,290
the future and as they are added they

41
00:01:40,039 --> 00:01:38,579
will also be accessible through this

42
00:01:41,719 --> 00:01:40,049
interface so i'm going to i'm going to

43
00:01:43,460 --> 00:01:41,729
go back and drive the camera because i

44
00:01:47,440 --> 00:01:43,470
want to zoom in on it while Tony tells

45
00:01:51,920 --> 00:01:50,330
so I was going to comment that one of

46
00:01:54,350 --> 00:01:51,930
the reasons that we have these

47
00:01:58,340 --> 00:01:54,360
demonstrations is because we have a lot

48
00:02:00,859 --> 00:01:58,350
of the science community here and the

49
00:02:03,440 --> 00:02:00,869
idea is to introduce these interfaces

50
00:02:05,780 --> 00:02:03,450
and the tools that Hubble offers to the

51
00:02:08,449 --> 00:02:05,790
community get their feedback make sure

52
00:02:10,520 --> 00:02:08,459
that they are aware that these tools

53
00:02:12,920 --> 00:02:10,530
exist and then if they have specific

54
00:02:13,520 --> 00:02:12,930
questions we have people like Tony and

55
00:02:16,610 --> 00:02:13,530
leave

56
00:02:18,770 --> 00:02:16,620
here to answer them and that helps us

57
00:02:22,550 --> 00:02:18,780
improve the system and also it's a great

58
00:02:24,559 --> 00:02:22,560
way for us to let them get hands-on with

59
00:02:26,840 --> 00:02:24,569
the tools so at this point we're going

60
00:02:29,420 --> 00:02:26,850
to have Tony and me talk about this new

61
00:02:31,820 --> 00:02:29,430
tool and how an astronomer a dumb

62
00:02:36,979 --> 00:02:31,830
astronomer like me could use it to get

63
00:02:39,559 --> 00:02:36,989

some data out of the archive Mike and

64
00:02:41,750 --> 00:02:39,569
then you can drive all right so I've

65
00:02:50,630 --> 00:02:41,760
loaded the mass website right here on

66
00:02:55,790 --> 00:02:50,640
our browser I go to that side okay all

67
00:02:58,960 --> 00:02:55,800
right and the URL is masked at SESC ided

68
00:03:02,000 --> 00:02:58,970
you but you can also get it from the

69
00:03:04,400 --> 00:03:02,010
archive classic page just by entering

70
00:03:07,520 --> 00:03:04,410
your favorite target right here right in

71
00:03:10,220 --> 00:03:07,530
the main archived at st SE I to edu and

72
00:03:13,850 --> 00:03:10,230
then that will launch you over to the

73
00:03:21,920 --> 00:03:13,860
mast portal page so what I'm going to do

74
00:03:24,830 --> 00:03:21,930
I can find my cursor and it will launch

75
00:03:26,720 --> 00:03:24,840
you to this interface right here this is

76
00:03:29,060 --> 00:03:26,730
a new interface once again it's a

77
00:03:31,190 --> 00:03:29,070
one-stop shop for all the holdings

78
00:03:33,530 --> 00:03:31,200
within the archive so I'm going to just

79
00:03:35,810 --> 00:03:33,540
do a simple search what we call a

80
00:03:37,819 --> 00:03:35,820
positional search Scott is your kind of

81
00:03:40,850 --> 00:03:37,829
your bread and butter way to find your

82
00:03:43,340 --> 00:03:40,860
data in the archive the interface is

83
00:03:45,830 --> 00:03:43,350
very interactive it's really an

84
00:03:47,360 --> 00:03:45,840
application it's not necessarily a web

85
00:03:50,210 --> 00:03:47,370
page so you don't want to hit the back

86
00:03:52,910 --> 00:03:50,220
button you'll lose all context here this

87
00:03:56,660 --> 00:03:52,920
is a single page app you just stay here

88
00:03:58,819 --> 00:03:56,670

and work within your data so i just

89
00:04:01,670 --> 00:03:58,829
searched m60 right here and you can see

90
00:04:03,740 --> 00:04:01,680
i got quite a few observations that came

91
00:04:08,110 --> 00:04:03,750
out of the archive and if i can lift my

92
00:04:11,180 --> 00:04:08,120
glasses there we go how many 31 anyone

93
00:04:13,220 --> 00:04:11,190
371 observations and they're across many

94
00:04:16,940 --> 00:04:13,230
mission so if you can see right down

95
00:04:20,270 --> 00:04:16,950
here you've got HST Hubble can you read

96
00:04:23,029 --> 00:04:20,280
this all for melee Swift GALEX iue and

97
00:04:25,010 --> 00:04:23,039
Hut okay so what I'm going to do is I'm

98
00:04:26,150 --> 00:04:25,020
just going to down sample to Hubble

99
00:04:29,990 --> 00:04:26,160
right here

100
00:04:32,930 --> 00:04:30,000
and the Hubble is sort of the flagship

101
00:04:35,450 --> 00:04:32,940
mission so what you may have seen is

102
00:04:37,490 --> 00:04:35,460
that so we even explained to you and

103
00:04:39,920 --> 00:04:37,500
they're about to is that these are where

104
00:04:42,080 --> 00:04:39,930
the observations are an m60 is behind

105
00:04:43,850 --> 00:04:42,090
here so if you google m60 you'll see

106
00:04:47,840 --> 00:04:43,860
what an image of that galaxy looks like

107
00:04:50,240 --> 00:04:47,850
and and when he just selected HST that's

108
00:04:51,560 --> 00:04:50,250
all that's left the other things that

109
00:04:54,230 --> 00:04:51,570
were on there were the other

110
00:04:56,390 --> 00:04:54,240
observatories that had observed it well

111
00:04:58,400 --> 00:04:56,400
said so yeah we filtered down all of the

112
00:05:00,560 --> 00:04:58,410
records and we're not just looking at

113
00:05:05,300 --> 00:05:00,570

the Hubble records right now in the grid

114
00:05:07,160 --> 00:05:05,310
and over on the sky view same thing just

115
00:05:09,350 --> 00:05:07,170
the week we call these footprints

116
00:05:12,410 --> 00:05:09,360
through the outline of each aperture on

117
00:05:15,860 --> 00:05:12,420
the sky and this way you just can't have

118
00:05:17,300 --> 00:05:15,870
a context you can keep in context of the

119
00:05:20,930 --> 00:05:17,310
data you're interested in so I'm going

120
00:05:30,170 --> 00:05:20,940
to down sample a little bit more for

121
00:05:31,820 --> 00:05:30,180
example if I wanted so wait so okay boys

122
00:05:35,150 --> 00:05:31,830
and girls does anybody know what that

123
00:05:38,030 --> 00:05:35,160
shape is that's a wide field planetary

124
00:05:40,280 --> 00:05:38,040
camera 2 that's the old instruments or

125
00:05:44,600 --> 00:05:40,290
some of these are the older observation

126
00:05:46,460 --> 00:05:44,610
so you know that from the classic wedge

127
00:05:49,220 --> 00:05:46,470
shape and so you can tell right away

128
00:05:50,720 --> 00:05:49,230
that with pic 2 has taken observations

129
00:05:53,990 --> 00:05:50,730
and there are many many more

130
00:05:56,060 --> 00:05:54,000
observations if we scroll down correct

131
00:05:58,850 --> 00:05:56,070
so do you want to filter on with pick

132
00:06:05,090 --> 00:05:58,860
two no no I want new stuff new stuff

133
00:06:10,820 --> 00:06:05,100
okay whoopsie 3i our brand brand new

134
00:06:14,180 --> 00:06:10,830
instrument since 2009 okay all right now

135
00:06:17,570 --> 00:06:14,190
you're looking at just the whiff c3i our

136
00:06:19,070 --> 00:06:17,580
observations taken around m60 and you

137
00:06:21,950 --> 00:06:19,080
can see a downsampled I should mention

138
00:06:24,800 --> 00:06:21,960

over here on the right the red dashed

139
00:06:27,800 --> 00:06:24,810
circle represents our search radius and

140
00:06:29,840 --> 00:06:27,810
in the center that's there's also a

141
00:06:33,890 --> 00:06:29,850
crosshair representing the the actual

142
00:06:37,670 --> 00:06:33,900
center point of our search and this was

143
00:06:39,950 --> 00:06:37,680
resolved up here when I entered m60 the

144
00:06:42,409 --> 00:06:39,960
magic happens where names are resolved

145
00:06:43,610 --> 00:06:42,419
physicians and all the software takes

146
00:06:44,450 --> 00:06:43,620
care of that for you just have to

147
00:06:47,300 --> 00:06:44,460
remember the name of your favorite

148
00:06:49,460 --> 00:06:47,310
target so at this point let's say I just

149
00:06:50,870 --> 00:06:49,470
want these observations around the

150
00:06:52,700 --> 00:06:50,880
center of the galaxy and I don't really

151
00:06:54,350 --> 00:06:52,710
want that one on the edge if you've

152
00:06:56,839 --> 00:06:54,360
noticed I'm getting a little hover

153
00:06:58,670 --> 00:06:56,849
action when the mouse goes over that it

154
00:07:00,860 --> 00:06:58,680
gets slightly brighter that means it's

155
00:07:03,740 --> 00:07:00,870
selectable so i went ahead and selected

156
00:07:06,499 --> 00:07:03,750
those and the footprint is now brighter

157
00:07:09,650 --> 00:07:06,509
in color indicating selection and over

158
00:07:12,260 --> 00:07:09,660
here on the grid they were also selected

159
00:07:14,810 --> 00:07:12,270
they went blue and the far left checkbox

160
00:07:16,730 --> 00:07:14,820
is indicating that they're selected so

161
00:07:19,700 --> 00:07:16,740
if you were just going straight through

162
00:07:21,200 --> 00:07:19,710
and you wanted to get out and get back

163
00:07:23,330 --> 00:07:21,210

on with your life as quickly as possible

164
00:07:27,560 --> 00:07:23,340
you would just come up here and just add

165
00:07:31,430 --> 00:07:27,570
all of those selected records to what we

166
00:07:33,790 --> 00:07:31,440
call the download basket and right now

167
00:07:38,980 --> 00:07:33,800
how many do we have there Lee how many

168
00:07:42,620 --> 00:07:38,990
33 files really good Lee you're doing

169
00:07:45,710 --> 00:07:42,630
doing really well cuz we can't read it

170
00:07:51,529 --> 00:07:45,720
back here sup we have no idea you can

171
00:07:55,640 --> 00:07:51,539
tell us 105 1000 via you just do one

172
00:07:58,820 --> 00:07:55,650
price yeah thank you van anis leave Anna

173
00:08:01,520 --> 00:07:58,830
all right Janice from the prices yeah ok

174
00:08:03,469 --> 00:08:01,530
so I'm going to select all of these

175
00:08:08,600 --> 00:08:03,479
files these are actual files at this

176
00:08:12,230 --> 00:08:08,610
greeting aren't you yes and you can now

177
00:08:16,100 --> 00:08:12,240
save them directly to your hard drive

178
00:08:17,930 --> 00:08:16,110
and the download basket lets you decide

179
00:08:20,870 --> 00:08:17,940
do you want to bundle than one giant

180
00:08:23,510 --> 00:08:20,880
gzip or do you want to save it as a

181
00:08:26,800 --> 00:08:23,520
double you get or curl script I'm just

182
00:08:30,350 --> 00:08:26,810
going to keep the default and I'm gonna

183
00:08:32,510 --> 00:08:30,360
it's now bundling up that tar and then

184
00:08:34,040 --> 00:08:32,520
when it completes you'll see it chrome

185
00:08:39,199 --> 00:08:34,050
will automatically download it to my

186
00:08:41,120 --> 00:08:39,209
downloads directory so something's

187
00:08:44,820 --> 00:08:41,130
happening this is good we're at

188
00:08:47,580 --> 00:08:44,830

thirty-nine percent complete so um

189
00:08:50,280 --> 00:08:47,590
while this is happening I can sew sew

190
00:08:53,430 --> 00:08:50,290
sew a question so just to make sure

191
00:08:55,560 --> 00:08:53,440
people understand this data is not here

192
00:08:59,190 --> 00:08:55,570
it's gone reaching back to Space

193
00:09:01,290 --> 00:08:59,200
Telescope and getting the data finding

194
00:09:03,240 --> 00:09:01,300
it and then pulling it right here so you

195
00:09:04,740 --> 00:09:03,250
could work on it if you want all right

196
00:09:07,170 --> 00:09:04,750
yes and if you look down here in the

197
00:09:09,060 --> 00:09:07,180
very bottom corner vegan Tony dornell

198
00:09:12,420 --> 00:09:09,070
consuming that's basically here's my

199
00:09:14,720 --> 00:09:12,430
cheesy nicely and it's ready to be

200
00:09:17,790 --> 00:09:14,730
opened up on your local hard drive and

201
00:09:20,040 --> 00:09:17,800
it's got fits files it's got catalog

202
00:09:22,650 --> 00:09:20,050
files it's got everything that masked

203
00:09:30,540 --> 00:09:22,660
essentially knows about the very center

204
00:09:36,360 --> 00:09:30,550
of that observation so so this is what I

205
00:09:39,720 --> 00:09:36,370
call crystal life yeah okay are you did

206
00:09:41,940 --> 00:09:39,730
a great job this is the bread and butter

207
00:09:44,340 --> 00:09:41,950
passed through the app you basically

208
00:09:46,380 --> 00:09:44,350
positional search down select what

209
00:09:49,410 --> 00:09:46,390
you're interested in added to the cart

210
00:09:51,330 --> 00:09:49,420
save it to the disk there are many many

211
00:09:54,120 --> 00:09:51,340
other features that are continuing to

212
00:09:58,290 --> 00:09:54,130
grow and in February will demonstrate

213
00:10:01,620 --> 00:09:58,300

those and the real goal is to push this

214
00:10:03,390 --> 00:10:01,630
entire application more to behave more

215
00:10:05,580 --> 00:10:03,400
like a desktop application and you'll

216
00:10:07,290 --> 00:10:05,590
see in February the types of things

217
00:10:09,590 --> 00:10:07,300
we're talking about where we'll be doing

218
00:10:13,230 --> 00:10:09,600
sort of pre analysis we can create

219
00:10:17,730 --> 00:10:13,240
color-magnitude diagram you can load up

220
00:10:20,610 --> 00:10:17,740
spectral plots directly in the tool you

221
00:10:24,180 --> 00:10:20,620
can overlay these high-resolution images

222
00:10:27,810 --> 00:10:24,190
into the sky and over plot catalogs so

223
00:10:31,170 --> 00:10:27,820
it's just onward and upward so I know a

224
00:10:32,820 --> 00:10:31,180
lot of you use the hub the archive now

225
00:10:34,130 --> 00:10:32,830
and you've made some beautiful images

226
00:10:36,360 --> 00:10:34,140
with it some of you are doing amateur

227
00:10:37,920 --> 00:10:36,370
astronomy with it some of you were

228
00:10:40,200 --> 00:10:37,930
making artwork with it i know there's

229
00:10:42,780 --> 00:10:40,210
several several people that visit our

230
00:10:44,340 --> 00:10:42,790
hangouts regularly who are even big fans

231
00:10:48,150 --> 00:10:44,350
of Zolt who you know do the image

232
00:10:50,580 --> 00:10:48,160
processing and so if you've used the

233
00:10:52,710 --> 00:10:50,590
archive before this promises to be a

234
00:10:54,720 --> 00:10:52,720
heck of a lot easier right that's

235
00:10:57,180 --> 00:10:54,730
correct and that's the feedback we get

236
00:10:58,300 --> 00:10:57,190
from a place like this when we show it

237
00:11:00,430 --> 00:10:58,310
to people they

238
00:11:02,140 --> 00:11:00,440

they stop what they're doing they go wow

239
00:11:04,090 --> 00:11:02,150
and then they go tell their colleagues

240
00:11:06,190 --> 00:11:04,100
and they say okay this is what you got

241
00:11:08,620 --> 00:11:06,200
it you got to see this so that's good

242
00:11:11,019 --> 00:11:08,630
feedback from us we usually just hear

243
00:11:13,150 --> 00:11:11,029
negative feedback back in the shop you

244
00:11:16,030 --> 00:11:13,160
know but it's good to hear the you know

245
00:11:18,880 --> 00:11:16,040
the user community actually appreciate

246
00:11:21,370 --> 00:11:18,890
the effort and I think and it's not just

247
00:11:23,680 --> 00:11:21,380
us the you know other facilities also

248
00:11:26,079 --> 00:11:23,690
using the web's changing and that's what

249
00:11:28,420 --> 00:11:26,089
makes all this possible no we talk a lot

250
00:11:29,620 --> 00:11:28,430
about telescopes getting bigger being

251
00:11:31,240 --> 00:11:29,630
able to see things we can't see now

252
00:11:33,040 --> 00:11:31,250
higher resolutions further back in the

253
00:11:35,110 --> 00:11:33,050
universe things like that this is the

254
00:11:36,760 --> 00:11:35,120
other side of the problem you need to

255
00:11:38,829 --> 00:11:36,770
not only be able to take this data but

256
00:11:41,019 --> 00:11:38,839
you've got to be able to ask good

257
00:11:43,540 --> 00:11:41,029
science questions of the data once you

258
00:11:45,550 --> 00:11:43,550
have it and that problem is going to get

259
00:11:48,100 --> 00:11:45,560
worse and more we're not worth just

260
00:11:49,990 --> 00:11:48,110
bigger and these kinds of solutions are

261
00:11:52,180 --> 00:11:50,000
going to be more important so it's good

262
00:11:54,190 --> 00:11:52,190
that we've got an easier interface into

263
00:11:56,200 --> 00:11:54,200

our into our archive because you'll want

264
00:11:57,760 --> 00:11:56,210
to be able to get the stuff as easy as

265
00:11:59,910 --> 00:11:57,770
you can because there's so much to

266
00:12:04,650 --> 00:11:59,920
choose from so you want to say something

267
00:12:09,430 --> 00:12:07,780
so in addition to the observer who might

268
00:12:11,380 --> 00:12:09,440
have said oh I want to look at this and

269
00:12:13,410 --> 00:12:11,390
one time which we've talked about

270
00:12:16,210 --> 00:12:13,420
several times before how do you get

271
00:12:18,250 --> 00:12:16,220
telescope time then they want to get

272
00:12:20,170 --> 00:12:18,260
their own data as well as data from

273
00:12:24,160 --> 00:12:20,180
other telescopes and use that for

274
00:12:26,110 --> 00:12:24,170
analysis but then after they've done

275
00:12:28,329 --> 00:12:26,120
some of their own analysis probably

276
00:12:31,240 --> 00:12:28,339
published a paper anybody than community

277
00:12:35,260 --> 00:12:31,250
can get the data and do new studies and

278
00:12:38,410 --> 00:12:35,270
in fact most not most but more than half

279
00:12:40,990 --> 00:12:38,420
of the the published papers come from

280
00:12:43,210 --> 00:12:41,000
the archive not from the original

281
00:12:45,760 --> 00:12:43,220
observer and that's because these

282
00:12:47,680 --> 00:12:45,770
observations can be used for many many

283
00:12:49,480 --> 00:12:47,690
many problems to look at different

284
00:12:51,610 --> 00:12:49,490
things about astrophysics so the

285
00:12:53,770 --> 00:12:51,620
original observer wanted to do a certain

286
00:12:55,570 --> 00:12:53,780
thing and other people want to do other

287
00:12:58,210 --> 00:12:55,580
things in combined data in different

288
00:13:00,790 --> 00:12:58,220

ways so that's why the archive is so

289
00:13:03,730 --> 00:13:00,800
powerful is that we're getting a lot

290
00:13:06,010 --> 00:13:03,740
more science by having this archive then

291
00:13:07,660 --> 00:13:06,020
rather than just shipping one data set

292
00:13:09,490 --> 00:13:07,670
to one observer

293
00:13:11,560 --> 00:13:09,500
not to mention I'll just mention the

294
00:13:13,510 --> 00:13:11,570
time factor the fact that Hubble has

295
00:13:16,780 --> 00:13:13,520
gone back and observe a lot of these

296
00:13:18,070 --> 00:13:16,790
targets now over 20 years you can really

297
00:13:21,790 --> 00:13:18,080
start to see things like they're like

298
00:13:23,860 --> 00:13:21,800
I'm 16 yeah yeah like variability and

299
00:13:26,260 --> 00:13:23,870
things like this are real interesting

300
00:13:28,180 --> 00:13:26,270
yeah so you can sort of see that and

301
00:13:29,800 --> 00:13:28,190
will show that in February you can

302
00:13:32,500 --> 00:13:29,810
actually see that directly out of the

303
00:13:34,930 --> 00:13:32,510
archive and find some very interesting

304
00:13:36,580 --> 00:13:34,940
very variable sources right there was a

305
00:13:38,170 --> 00:13:36,590
time when you know we this this new

306
00:13:39,550 --> 00:13:38,180
relatively new term of transient

307
00:13:41,290 --> 00:13:39,560
astronomy is now going on where you

308
00:13:43,210 --> 00:13:41,300
could see transients events happening

309
00:13:44,860 --> 00:13:43,220
and make animations of seems like

310
00:13:47,620 --> 00:13:44,870
supernovas and stuff so it's really an

311
00:13:49,420 --> 00:13:47,630
amazing time so we will probably have a

312
00:13:50,650 --> 00:13:49,430
more what we know we will have a more

313
00:13:52,120 --> 00:13:50,660

detailed hang out when it's gets

314
00:13:54,100 --> 00:13:52,130
released so look for that Carol and I

315
00:13:55,840 --> 00:13:54,110
will well let everybody know when that

316
00:13:57,730 --> 00:13:55,850
happens sometime probably in February

317
00:13:59,080 --> 00:13:57,740
good work this is exciting i can't wait

318
00:14:01,120 --> 00:13:59,090
till this comes live so that's really

319
00:14:02,710 --> 00:14:01,130
cool okay Angie alright so now what

320
00:14:04,240 --> 00:14:02,720
Carolyn are going to do is go over to

321
00:14:10,840 --> 00:14:04,250
this table and finish up what we were

322
00:14:21,439 --> 00:14:17,030
because see how easy that was okay all

323
00:14:23,449 --> 00:14:21,449
right yeah we don't need that okay so

324
00:14:25,129 --> 00:14:23,459
that is the muck that's the archive

325
00:14:26,840 --> 00:14:25,139
update and that was that's something

326
00:14:28,369 --> 00:14:26,850
that I've been dying to get you guys

327
00:14:31,429 --> 00:14:28,379
access to so hopefully you'll be getting

328
00:14:34,519 --> 00:14:31,439
that soon the meeting today has been

329
00:14:35,869 --> 00:14:34,529
really interesting i was i would i went

330
00:14:37,669 --> 00:14:35,879
to a plenary talk one of the funniest

331
00:14:41,090 --> 00:14:37,679
moments was i went to a plenary talk

332
00:14:42,710 --> 00:14:41,100
today where a guy was where the where an

333
00:14:44,299 --> 00:14:42,720
astronomer was trying to tell a whole

334
00:14:46,400 --> 00:14:44,309
lot a whole room full of astronomers

335
00:14:48,289 --> 00:14:46,410
about parallel universes and it was

336
00:14:50,840 --> 00:14:48,299
really very curious about that talk i

337
00:14:52,850 --> 00:14:50,850
didn't get to go see it so tell us about

338
00:14:54,470 --> 00:14:52,860

it it was the thing well I didn't

339
00:14:56,509 --> 00:14:54,480
understand it was the thing and I and I

340
00:14:58,009 --> 00:14:56,519
I got a sense that he was struggling a

341
00:15:01,069 --> 00:14:58,019
little bit himself parallel universes

342
00:15:05,269 --> 00:15:01,079
string theory all of this stuff is

343
00:15:06,979 --> 00:15:05,279
basically you have a theory that is it

344
00:15:10,910 --> 00:15:06,989
one of the one of the points in the talk

345
00:15:13,729 --> 00:15:10,920
was if X implies Y then y must be true

346
00:15:15,289 --> 00:15:13,739
and so if a theories that we note are

347
00:15:17,419 --> 00:15:15,299
true like quantum mechanics things like

348
00:15:19,369 --> 00:15:17,429
that imply something like string theory

349
00:15:21,199 --> 00:15:19,379
then string theory must be true and of

350
00:15:22,489 --> 00:15:21,209
course you know that's that's a line of

351
00:15:25,249 --> 00:15:22,499
thinking that you can argue with all you

352
00:15:26,239 --> 00:15:25,259
want but it's it was it was the point in

353
00:15:27,439 --> 00:15:26,249
the starting point of it and he was

354
00:15:29,119 --> 00:15:27,449
talking about what would parallel

355
00:15:30,799 --> 00:15:29,129
universes look like and how would we

356
00:15:32,929 --> 00:15:30,809
ever know and how many would there be I

357
00:15:35,269 --> 00:15:32,939
did not understand a word he said

358
00:15:36,739 --> 00:15:35,279
because that stuff always a string

359
00:15:38,780 --> 00:15:36,749
theory makes my head hurt every time

360
00:15:41,749 --> 00:15:38,790
someone tries to explain it to me I just

361
00:15:44,359 --> 00:15:41,759
don't understand it it makes me mad but

362
00:15:46,999 --> 00:15:44,369
anyway that was a talk I saw today the

363
00:15:49,039 --> 00:15:47,009

amusing part of it was his AV went its

364
00:15:50,509 --> 00:15:49,049
screen went wonky and so you can only

365
00:15:52,910 --> 00:15:50,519
see just a part of it and he was quite

366
00:15:54,199 --> 00:15:52,920
amusing and he was quite but he was

367
00:15:55,759 --> 00:15:54,209
quite entertaining with being able to

368
00:15:57,019 --> 00:15:55,769
talk about in order to make people laugh

369
00:16:00,799 --> 00:15:57,029
about it and stuff it was it was a

370
00:16:02,659 --> 00:16:00,809
entertaining talk what about you well we

371
00:16:04,579 --> 00:16:02,669
talked we've talked a little bit in a

372
00:16:06,889 --> 00:16:04,589
previous hang out about a lot of the

373
00:16:08,809 --> 00:16:06,899
things that I went to see of course we

374
00:16:10,519 --> 00:16:08,819
had a lot of sessions as we do we have

375
00:16:12,499 --> 00:16:10,529
these individual sessions where people

376
00:16:15,409 --> 00:16:12,509
give ten minute talks on different

377
00:16:17,689 --> 00:16:15,419
topics there's a lot there were a few

378
00:16:20,550 --> 00:16:17,699
talks on exoplanets and debris disks but

379
00:16:23,220 --> 00:16:20,560
the the topics seem to move

380
00:16:26,490 --> 00:16:23,230
work towards the nearby universe and

381
00:16:28,920 --> 00:16:26,500
then distant universe is a lot of data

382
00:16:31,920 --> 00:16:28,930
on how galaxies are formed how they

383
00:16:33,960 --> 00:16:31,930
interact how you measure them multi

384
00:16:36,780 --> 00:16:33,970
wavelengths not just helpful but many

385
00:16:39,450 --> 00:16:36,790
observatories the data put together and

386
00:16:41,550 --> 00:16:39,460
what we can learn and one of the

387
00:16:44,040 --> 00:16:41,560
questions is when you look back in time

388
00:16:46,320 --> 00:16:44,050

when did star formation start in

389
00:16:49,350 --> 00:16:46,330
galaxies and so there were a lot of

390
00:16:51,240 --> 00:16:49,360
those topics today did you go to that

391
00:16:52,890 --> 00:16:51,250
one on gravitational waves I did not get

392
00:16:54,480 --> 00:16:52,900
to go on gravitation because they still

393
00:16:58,019 --> 00:16:54,490
haven't found any right you haven't

394
00:16:59,820 --> 00:16:58,029
found any so the idea with the

395
00:17:02,160 --> 00:16:59,830
gravitational waves is you're looking

396
00:17:04,290 --> 00:17:02,170
for some phenomenon where there's a

397
00:17:06,780 --> 00:17:04,300
dramatic change in the gravity and this

398
00:17:09,120 --> 00:17:06,790
can be a collapse or something some

399
00:17:11,280 --> 00:17:09,130
catastrophic events where the gravity

400
00:17:13,860 --> 00:17:11,290
changes a lot and that the and that

401
00:17:18,510 --> 00:17:13,870
would be if it could be detected that

402
00:17:20,960 --> 00:17:18,520
would be in evidence that gravity works

403
00:17:26,669 --> 00:17:20,970
with waves and it's a very difficult

404
00:17:28,830 --> 00:17:26,679
experimental problem and all kinds of

405
00:17:31,680 --> 00:17:28,840
sophisticated instrumentation have been

406
00:17:33,810 --> 00:17:31,690
built and new techniques but as of yet

407
00:17:35,610 --> 00:17:33,820
there isn't really any definitive

408
00:17:37,470 --> 00:17:35,620
evidence of it that doesn't mean it

409
00:17:38,850 --> 00:17:37,480
doesn't exist it's just very very hard

410
00:17:41,100 --> 00:17:38,860
to observe and I think that kind of

411
00:17:44,610 --> 00:17:41,110
addresses your previous comment about

412
00:17:47,370 --> 00:17:44,620
multiverses is that it's fun to

413
00:17:48,900 --> 00:17:47,380

speculate about them but I think

414
00:17:50,940 --> 00:17:48,910
probably the bottom line at least we're

415
00:17:53,340 --> 00:17:50,950
an astronomer like me is what's the

416
00:17:55,230 --> 00:17:53,350
evidence and if we believe something

417
00:17:57,960 --> 00:17:55,240
exists and we have to find a way of

418
00:18:00,060 --> 00:17:57,970
getting data on it sometimes your

419
00:18:01,700 --> 00:18:00,070
experimental technique does not work out

420
00:18:04,500 --> 00:18:01,710
that you can detect it that doesn't

421
00:18:06,150 --> 00:18:04,510
eliminate the theory it just means you

422
00:18:10,590 --> 00:18:06,160
don't have the right instrumentation yet

423
00:18:12,660 --> 00:18:10,600
but it does draw one closer to the idea

424
00:18:14,850 --> 00:18:12,670
that maybe this thing that's being

425
00:18:16,620 --> 00:18:14,860
proposed doesn't exist or it's not being

426
00:18:18,960 --> 00:18:16,630
proposed in the correct way so that's

427
00:18:20,730 --> 00:18:18,970
kind of how we think show me the data

428
00:18:21,139 --> 00:18:20,740
and a lot of my friends will tell you

429
00:18:22,729 --> 00:18:21,149
there

430
00:18:24,289 --> 00:18:22,739
tired of me saying that all the time but

431
00:18:25,820 --> 00:18:24,299
they'll say well what about this and

432
00:18:27,409 --> 00:18:25,830
what about that's i will say tell me

433
00:18:29,119 --> 00:18:27,419
that where the data is and what's the

434
00:18:30,979 --> 00:18:29,129
evidence for it and that's how

435
00:18:32,810 --> 00:18:30,989
astronomers think so i can understand

436
00:18:34,430 --> 00:18:32,820
how people would have had trouble with

437
00:18:36,079 --> 00:18:34,440
this talk especially if the view graph

438
00:18:37,999 --> 00:18:36,089

didn't work yeah and STIs yeah really

439
00:18:39,469 --> 00:18:38,009
cuz its string theory well the thing but

440
00:18:41,089 --> 00:18:39,479
the thing about string theory that

441
00:18:42,079 --> 00:18:41,099
bothers me the most is it's you're right

442
00:18:44,599 --> 00:18:42,089
it's one of those things where the

443
00:18:46,249 --> 00:18:44,609
theory seems sound but there's

444
00:18:47,959 --> 00:18:46,259
absolutely no way you're talking about

445
00:18:51,139 --> 00:18:47,969
strings on order of the Planck length

446
00:18:52,729 --> 00:18:51,149
you can't it doesn't matter how good we

447
00:18:55,009 --> 00:18:52,739
get at building instruments it's an

448
00:18:57,979 --> 00:18:55,019
impossible length to measure it's simply

449
00:18:59,810 --> 00:18:57,989
bounded by the universe we live in so

450
00:19:01,249 --> 00:18:59,820
what's the point I don't I just I don't

451
00:19:03,739 --> 00:19:01,259
that's my biggest problem with string

452
00:19:06,289 --> 00:19:03,749
theory so for people who weren't with us

453
00:19:07,999 --> 00:19:06,299
before something else that happened

454
00:19:11,060 --> 00:19:08,009
which everybody always waits for is the

455
00:19:13,999 --> 00:19:11,070
NASA Town Hall NASA town hall is when

456
00:19:15,889 --> 00:19:14,009
nasa astrophysics which is part of the

457
00:19:17,690 --> 00:19:15,899
science Mission Directorate so science

458
00:19:19,159 --> 00:19:17,700
Mission Directorate in NASA there's

459
00:19:21,079 --> 00:19:19,169
administrator science Mission

460
00:19:23,419 --> 00:19:21,089
Directorate and then there's

461
00:19:25,909 --> 00:19:23,429
astrophysics earth science planetary and

462
00:19:28,249 --> 00:19:25,919
heliophysics the people who come and

463
00:19:31,249 --> 00:19:28,259

address the American Astronomical

464
00:19:34,669 --> 00:19:31,259
Society r is the head of astrophysics

465
00:19:37,070 --> 00:19:34,679
and so he he gave his view of how we can

466
00:19:39,469 --> 00:19:37,080
prepare in the next five years for the

467
00:19:42,499 --> 00:19:39,479
decadal report and what he is looking

468
00:19:46,249 --> 00:19:42,509
for and so it's it's this tension

469
00:19:49,070 --> 00:19:46,259
between this community saying what we'd

470
00:19:51,409 --> 00:19:49,080
really like to study is this but we have

471
00:19:54,049 --> 00:19:51,419
to face the reality of the budget and

472
00:19:55,999 --> 00:19:54,059
understand that Congress and the

473
00:19:57,320 --> 00:19:56,009
American people through taxpayer dollars

474
00:20:00,379 --> 00:19:57,330
are only going to support a certain

475
00:20:03,889 --> 00:20:00,389
amount reminding everybody that the NASA

476
00:20:05,869 --> 00:20:03,899
budget is a fraction on the dollar not

477
00:20:08,329 --> 00:20:05,879
even a penny on the dollar and the

478
00:20:13,549 --> 00:20:08,339
science budget of that is even smaller

479
00:20:15,680 --> 00:20:13,559
so it's nothing like DoD or welfare or

480
00:20:19,310 --> 00:20:15,690
anything like that it's a tiny tiny

481
00:20:21,229 --> 00:20:19,320
amount of our gross national product for

482
00:20:23,779 --> 00:20:21,239
the United States but still we have to

483
00:20:25,549 --> 00:20:23,789
spend it carefully and so we can wax

484
00:20:28,039 --> 00:20:25,559
eloquent about all the things we want to

485
00:20:29,839 --> 00:20:28,049
study but then you have to come back to

486
00:20:30,549 --> 00:20:29,849
the reality what kind of money do we

487
00:20:33,009 --> 00:20:30,559
have and

488
00:20:36,129 --> 00:20:33,019

can we we need to responsibly spend it

489
00:20:38,769 --> 00:20:36,139
and so the head of astrophysics gave us

490
00:20:41,560 --> 00:20:38,779
his view about the things he sees

491
00:20:44,619 --> 00:20:41,570
emerging in the community the big-ticket

492
00:20:46,629 --> 00:20:44,629
items not prescribing our science but

493
00:20:50,139 --> 00:20:46,639
just saying this is what it looks like

494
00:20:51,610 --> 00:20:50,149
to me so if that's what it is tell me

495
00:20:53,289 --> 00:20:51,620
what kind of missions you need and all

496
00:20:55,060 --> 00:20:53,299
the technology you need and if that's

497
00:20:57,669 --> 00:20:55,070
not what it is and you need to add

498
00:20:59,499 --> 00:20:57,679
another box tell me what that boxes and

499
00:21:01,299 --> 00:20:59,509
and what kind of technology do you need

500
00:21:03,730 --> 00:21:01,309
there so that's kind of how we do this

501
00:21:07,810 --> 00:21:03,740
and every year we get an update with him

502
00:21:10,480 --> 00:21:07,820
have a discussion and and try to do more

503
00:21:12,639 --> 00:21:10,490
studies and make preparation for the

504
00:21:15,580 --> 00:21:12,649
decade report which will happen around

505
00:21:16,899 --> 00:21:15,590
20 19 20 20 right and another but

506
00:21:18,009 --> 00:21:16,909
another thing he did yeah and another

507
00:21:19,480 --> 00:21:18,019
thing he did was it gave us a status

508
00:21:20,499 --> 00:21:19,490
report on some of the missions and how

509
00:21:22,600 --> 00:21:20,509
they're doing now and how they're being

510
00:21:24,789 --> 00:21:22,610
funded one of the things I was very

511
00:21:27,279 --> 00:21:24,799
gratified to see was you know W first

512
00:21:29,769 --> 00:21:27,289
was the top priority of the last decade

513
00:21:31,029 --> 00:21:29,779

o survey and that the funding and

514
00:21:33,249 --> 00:21:31,039
starting on that now and looks like

515
00:21:34,269 --> 00:21:33,259
progress is being made in 2015 what

516
00:21:36,580 --> 00:21:34,279
they're going to be built is starting

517
00:21:39,279 --> 00:21:36,590
the what it's called the technology

518
00:21:40,629 --> 00:21:39,289
development phase of what Mark postman

519
00:21:43,090 --> 00:21:40,639
was saying this morning is a lot of

520
00:21:45,009 --> 00:21:43,100
stuff still needs to be developed and

521
00:21:46,989 --> 00:21:45,019
built and even invented much like with

522
00:21:48,999 --> 00:21:46,999
James Webb so that I guess has finally

523
00:21:51,639 --> 00:21:49,009
started this year right study of what

524
00:21:54,700 --> 00:21:51,649
technology you think maybe doesn't exist

525
00:21:56,649 --> 00:21:54,710
but might be possible and that so you do

526
00:21:59,289 --> 00:21:56,659
the study and then you say okay this is

527
00:22:00,730 --> 00:21:59,299
a technology we think that in you know

528
00:22:03,519 --> 00:22:00,740
five to ten years we can actually

529
00:22:05,409 --> 00:22:03,529
develop it's kind of like you know

530
00:22:07,210 --> 00:22:05,419
making new cars where you say okay in

531
00:22:09,279 --> 00:22:07,220
five years we think the car will be

532
00:22:12,369 --> 00:22:09,289
autonomous and we think we can do that

533
00:22:15,100 --> 00:22:12,379
or no we can't sew sew matching the

534
00:22:17,019 --> 00:22:15,110
science studying what's needed studying

535
00:22:19,239 --> 00:22:17,029
the technology and then saying whether

536
00:22:21,700 --> 00:22:19,249
it's realistic or not and then can we

537
00:22:23,080 --> 00:22:21,710
afford it so it's a long process yeah so

538
00:22:25,450 --> 00:22:23,090

it's very it's always a well-attended

539
00:22:26,980 --> 00:22:25,460
event and tomorrow there's going to be

540
00:22:29,230 --> 00:22:26,990
one on the Hubble Space Telescope Space

541
00:22:32,379 --> 00:22:29,240
Telescope will have a town hall around

542
00:22:33,730 --> 00:22:32,389
lunchtime and we'll talk about how us a

543
00:22:35,919 --> 00:22:33,740
little bit about what we talked about

544
00:22:37,440 --> 00:22:35,929
today as well what is Hubble going to be

545
00:22:40,359 --> 00:22:37,450
like in the next five to ten years

546
00:22:42,280 --> 00:22:40,369
what's its role in our community and

547
00:22:44,080 --> 00:22:42,290
then we're going to have some update

548
00:22:46,570 --> 00:22:44,090
it's on the frontier fields and a couple

549
00:22:48,370 --> 00:22:46,580
other topics yeah I can't ken and jen

550
00:22:50,620 --> 00:22:48,380
and various other people are going to be

551
00:22:52,000 --> 00:22:50,630
talking at that one so anniversary

552
00:22:53,890 --> 00:22:52,010
celebration that's right we're going to

553
00:22:55,570 --> 00:22:53,900
have some talking about that and we'll

554
00:22:58,120 --> 00:22:55,580
have a guest from NASA headquarters

555
00:23:00,430 --> 00:22:58,130
tomorrow who will talk about 25th

556
00:23:04,210 --> 00:23:00,440
anniversary celebrations on our hangout

557
00:23:06,310 --> 00:23:04,220
okay so that's pretty anything else that

558
00:23:07,960 --> 00:23:06,320
we can think of about today we did our

559
00:23:09,040 --> 00:23:07,970
hangouts earlier today a lot of good lot

560
00:23:10,840 --> 00:23:09,050
of good stuff coming out of the meeting

561
00:23:13,150 --> 00:23:10,850
we're trying to cover as much of it as

562
00:23:14,350 --> 00:23:13,160
we can but it's just too much well you

563
00:23:17,110 --> 00:23:14,360

know we get the stuff that we find the

564
00:23:19,300 --> 00:23:17,120
most interesting so so that I guess

565
00:23:21,160 --> 00:23:19,310
we'll stop for this one anything else

566
00:23:23,650 --> 00:23:21,170
you wanna add Carol yep okay so all

567
00:23:26,980 --> 00:23:23,660
right so so tomorrow we've got for

568
00:23:28,630 --> 00:23:26,990
hangouts coming up 1030 over at the

569
00:23:30,280 --> 00:23:28,640
Northrop Grumman booth I will be will

570
00:23:31,810 --> 00:23:30,290
have meguri the president of the

571
00:23:35,200 --> 00:23:31,820
American Astronomical Society talking

572
00:23:36,880 --> 00:23:35,210
about industry and astronomy and how

573
00:23:38,680 --> 00:23:36,890
they can interact that'll be over at

574
00:23:40,480 --> 00:23:38,690
Northrop Grumman at one o'clock also at

575
00:23:41,440 --> 00:23:40,490
North overwhelm it might be here or the

576
00:23:44,050 --> 00:23:41,450
North akroma booth I can remember

577
00:23:46,290 --> 00:23:44,060
Alberto and and colleague of his we're

578
00:23:50,200 --> 00:23:46,300
going to be talking about exoplanets at

579
00:23:52,420 --> 00:23:50,210
three-thirty we have our hangout on the

580
00:23:54,010 --> 00:23:52,430
Hubble 25th of celebration kickoff which

581
00:23:55,570 --> 00:23:54,020
is basically we're kind of considering

582
00:23:57,340 --> 00:23:55,580
this week sort of the kickoff right and

583
00:23:59,470 --> 00:23:57,350
then we'll do a follow-up and then that

584
00:24:03,190 --> 00:23:59,480
will be it from this meeting and we will

585
00:24:05,380 --> 00:24:03,200
be done are you holding up are you

586
00:24:07,150 --> 00:24:05,390
entire Duncan tired these are very long

587
00:24:09,400 --> 00:24:07,160
day this is one of the most intense

588
00:24:11,680 --> 00:24:09,410

meetings that I've been too because

589
00:24:14,110 --> 00:24:11,690
meant very often they started 830 in the

590
00:24:17,170 --> 00:24:14,120
morning they go to around six and then

591
00:24:19,420 --> 00:24:17,180
the exhibit hall closes but this meeting

592
00:24:21,130 --> 00:24:19,430
we've had many many many many meetings

593
00:24:25,210 --> 00:24:21,140
all the way up until nine o'clock no

594
00:24:27,730 --> 00:24:25,220
like 12 hours every day yes and I've

595
00:24:29,710 --> 00:24:27,740
actually yeah and I've actually recorded

596
00:24:31,750 --> 00:24:29,720
some of them there was the UV Ori

597
00:24:34,420 --> 00:24:31,760
session that was on monday i recorded it

598
00:24:37,030 --> 00:24:34,430
i also recorded the JWST Town Hall last

599
00:24:39,280 --> 00:24:37,040
night and I'll record the HST Town Hall

600
00:24:41,980 --> 00:24:39,290
tomorrow they won't let me live stream

601
00:24:43,660 --> 00:24:41,990
those here but i am recording them and

602
00:24:44,860 --> 00:24:43,670
they will be posted to our hubble site

603
00:24:47,140 --> 00:24:44,870
channel youtube channel so if you

604
00:24:48,460 --> 00:24:47,150
haven't subscribed hubble site yet you

605
00:24:49,960 --> 00:24:48,470
need to this is how you find that's the

606
00:24:51,880 --> 00:24:49,970
best way to find out about the hangouts

607
00:24:54,970 --> 00:24:51,890
that we've got coming also follow us on

608
00:24:56,050 --> 00:24:54,980
twitter hubble telescope as well as g

609
00:24:58,480 --> 00:24:56,060
plus we're also

610
00:25:00,670 --> 00:24:58,490
Hubble Space Telescope so all right