



1
00:00:13,549 --> 00:00:11,749
so what are you doing here today Martin

2
00:00:21,980 --> 00:00:13,559
you're gonna shoot these guys up or you

3
00:00:27,589 --> 00:00:21,990
just here for supervision oh I thought

4
00:00:29,560 --> 00:00:27,599
that was Drew's job and I'd supervise

5
00:00:31,880 --> 00:00:29,570
him actually means I don't do anything

6
00:00:34,190 --> 00:00:31,890
he's really independent he's doing his

7
00:00:36,860 --> 00:00:34,200
job as your ev1 I've been happy with his

8
00:00:39,770 --> 00:00:36,870
performance it's been doing great so I

9
00:00:42,260 --> 00:00:39,780
couldn't just leave him alone doing all

10
00:00:49,220 --> 00:00:42,270
I can do is I can only remind him don't

11
00:00:54,340 --> 00:00:49,230
screw it up it's just a future of

12
00:01:01,520 --> 00:00:54,350
science at state you'll find it real so

13
00:01:03,020 --> 00:01:01,530

AMS not really but maybe maybe it will

14

00:01:11,399 --> 00:01:03,030

be hopefully I'd say hopefully it will

15

00:01:14,459 --> 00:01:11,409

be guaranteed it will be something

16

00:01:16,410 --> 00:01:14,469

all right you were explaining to me all

17

00:01:17,819 --> 00:01:16,420

right that my right answer that's okay

18

00:01:19,590 --> 00:01:17,829

yeah if we got truiy to make something

19

00:01:21,029 --> 00:01:19,600

up but you were explained you know we we

20

00:01:22,410 --> 00:01:21,039

used to say with Hubble that Hubble is

21

00:01:25,859 --> 00:01:22,420

unlocking the secrets of the universe

22

00:01:29,160 --> 00:01:25,869

but I think with this AMS this is some

23

00:01:31,349 --> 00:01:29,170

pretty exciting stuff more secrets more

24

00:01:31,919 --> 00:01:31,359

secrets of yet you're like the secret

25

00:01:36,959 --> 00:01:31,929

unlocker

26
00:01:38,190 --> 00:01:36,969
as it did have a better secret hi Marcus

27
00:01:40,230 --> 00:01:38,200
tell me a little bit about this cute

28
00:01:43,940 --> 00:01:40,240
Hugo Hummer could only see stuff this is

29
00:01:46,469 --> 00:01:43,950
good right yeah right it's like pictures

30
00:01:48,479 --> 00:01:46,479
so AMS good say is they're all fake

31
00:01:49,740 --> 00:01:48,489
pictures but anyway drew make sure he

32
00:01:52,919 --> 00:01:49,750
doesn't lie very good

33
00:01:54,330 --> 00:01:52,929
so what AMS could do yeah is as an

34
00:01:55,619 --> 00:01:54,340
example of one of the things that goes

35
00:01:57,510 --> 00:01:55,629
yeah did you know you have all these

36
00:01:59,369 --> 00:01:57,520
galaxies and stars out there the Hubble

37
00:02:00,749 --> 00:01:59,379
could see yeah very pretty the theory

38
00:02:03,929 --> 00:02:00,759

that some of those may be made up of

39

00:02:05,520 --> 00:02:03,939

antimatter yeah so inside of stars you

40

00:02:07,380 --> 00:02:05,530

have the bigger elements are made like

41

00:02:10,469 --> 00:02:07,390

oxygen nitrogen that have a lot of

42

00:02:13,500 --> 00:02:10,479

electrons a lot of protons yeah so if we

43

00:02:15,449 --> 00:02:13,510

can sense an anti oxygen or anti

44

00:02:18,089 --> 00:02:15,459

nitrogen particle coming through AMS

45

00:02:21,390 --> 00:02:18,099

then we know that some of those stars

46

00:02:23,790 --> 00:02:21,400

and galaxies that Hubble sees may be

47

00:02:25,350 --> 00:02:23,800

made of antimatter

48

00:02:27,420 --> 00:02:25,360

pretty big deal that would be like one

49

00:02:29,310 --> 00:02:27,430

of the greatest discoveries ever maybe

50

00:02:31,380 --> 00:02:29,320

ever ever may be the greatest discovery

51
00:02:34,020 --> 00:02:31,390
or maybe the combination of Hubble and a

52
00:02:38,580 --> 00:02:34,030
mask together I think they do

53
00:02:39,840 --> 00:02:38,590
I think there may be some truth there

54
00:02:41,880 --> 00:02:39,850
because Hubble could see this up but

55
00:02:43,770 --> 00:02:41,890
can't explain what it is right so Hubble

56
00:02:46,110 --> 00:02:43,780
kind of identified the question yeah

57
00:02:48,930 --> 00:02:46,120
now AMS is gonna try to answer is the

58
00:02:55,130 --> 00:02:48,940
photographer and AMS is the scientist is

59
00:02:58,370 --> 00:02:55,140
that what it is hey excellent thank you

60
00:03:01,050 --> 00:02:58,380
and how's this crew doing mark great

61
00:03:08,070 --> 00:03:01,060
next time they do this EDA is gonna be

62
00:03:10,790 --> 00:03:08,080
real toward the end of your mission it

63
00:03:13,530 --> 00:03:10,800

sounds like when you deviate for

64

00:03:15,960 --> 00:03:13,540

currently on flight day 11 but if we get

65

00:03:19,890 --> 00:03:15,970

an extra day it'll move to play big 12

66

00:03:19,900 --> 00:03:22,690

all right

67

00:03:27,240 --> 00:03:23,980

and they haven't given you too much

68

00:03:29,320 --> 00:03:27,250

trouble showers has been behaving yeah

69

00:03:32,770 --> 00:03:29,330

so is this space or anything to do with

70

00:03:46,449 --> 00:03:32,780

the AMS no no no actually you know ms

71

00:03:47,770 --> 00:03:46,459

hopefully you guys that extend your

72

00:03:59,020 --> 00:03:47,780

flight much or would you have to do

73

00:04:00,880 --> 00:03:59,030

extra EVs or cuz you got enough work to

74

00:04:02,470 --> 00:04:00,890

do you know you've got these other

75

00:04:03,610 --> 00:04:02,480

things you want to do is very important

76

00:04:05,500 --> 00:04:03,620

we gotta get right anything installed

77

00:04:07,020 --> 00:04:05,510

yeah that thing that is Sam King is he

78

00:04:10,390 --> 00:04:07,030

counting on you to take care of things

79

00:04:12,309 --> 00:04:10,400

he's a he's an MIT guy if any guy who's

80

00:04:15,610 --> 00:04:12,319

doing the final or grappling mechanism

81

00:04:19,569 --> 00:04:15,620

you are yeah oh wow so you don't want to

82

00:04:21,219 --> 00:04:19,579

screw that never mind the money we got

83

00:04:22,420 --> 00:04:21,229

to find out we gotta these are very

84

00:04:23,350 --> 00:04:22,430

important information we're gonna get

85

00:04:25,960 --> 00:04:23,360

out of this thing

86

00:04:27,610 --> 00:04:25,970

you'd have the whole world mad at you we

87

00:04:29,920 --> 00:04:27,620

better not show this tape to Anthony's

88

00:04:30,880 --> 00:04:29,930

successful no it's that's pretty cool

89

00:04:32,890 --> 00:04:30,890

though I mean that's quite a

90

00:04:35,100 --> 00:04:32,900

responsibility and it's great to be a

91

00:04:38,680 --> 00:04:35,110

part of something like that yeah yeah

92

00:04:40,530 --> 00:04:38,690

you guys you guys have no trouble yeah

93

00:04:43,119 --> 00:04:40,540

it's amazing

94

00:04:45,040 --> 00:04:43,129

potential with the data

95

00:04:47,729 --> 00:04:45,050

yeah first time we're looking at

96

00:04:50,229 --> 00:04:47,739

particles instead of just like yeah

97

00:04:51,879 --> 00:04:50,239

it'll be great understand yeah if I just

98

00:04:54,040 --> 00:04:51,889

like is what that's what Hubble does it

99

00:04:56,079 --> 00:04:54,050

looks like this in light but this

100

00:04:57,790 --> 00:04:56,089

thing's actually gonna detect what the

101
00:04:58,869 --> 00:04:57,800
actual stuff is good Hubble's detectives

102
00:05:02,679 --> 00:04:58,879
that we don't know what it is and Hubble

103
00:05:04,600 --> 00:05:02,689
is an amazing discovery yeah probably

104
00:05:09,719 --> 00:05:04,610
one most important one says the universe

105
00:05:14,350 --> 00:05:09,729
is expanding so what's gravity

106
00:05:16,119 --> 00:05:14,360
understanding gravity right dark energy

107
00:05:21,159 --> 00:05:16,129
that might be oh maybe there's something

108
00:05:22,809 --> 00:05:21,169
after we don't know what it is maybe a

109
00:05:24,699 --> 00:05:22,819
mess can in and then our kids can think

110
00:05:26,379 --> 00:05:24,709
we were all stupid oh they even know

111
00:05:28,029 --> 00:05:26,389
what that stuff was they called it dark

112
00:05:33,820 --> 00:05:28,039
we like the dark ages where we didn't

113
00:05:35,739 --> 00:05:33,830

know it's right I hope you guys don't

114

00:05:37,480 --> 00:05:35,749

you know do well with this cuz this is

115

00:05:38,529 --> 00:05:37,490

important it's quite cool responsible

116

00:05:42,369 --> 00:05:38,539

I'm sure you guys are gonna do a great

117

00:05:44,259 --> 00:05:42,379

job I don't get in here oh you're alive

118

00:05:45,519 --> 00:05:44,269

now you can really say anything okay so

119

00:05:47,290 --> 00:05:45,529

now we can ask you anything you want you

120

00:05:49,660 --> 00:05:47,300

can't say

121

00:05:53,390 --> 00:05:49,670

all right man have a good run

122

00:05:56,930 --> 00:05:54,980

so the next time you're going to do this

123

00:06:01,129 --> 00:05:56,940

you can't really talk and yet because

124

00:06:02,080 --> 00:06:01,139

you're yeah you know that's definitely

125

00:06:03,980 --> 00:06:02,090

not me

126
00:06:07,370 --> 00:06:03,990
but next time you do this you're gonna

127
00:06:09,469 --> 00:06:07,380
be in space man we think of that it's

128
00:06:16,960 --> 00:06:09,479
pretty awesome real it's exciting it's

129
00:06:21,800 --> 00:06:20,120
hundred miles higher we go we go where

130
00:06:23,659 --> 00:06:21,810
you're going you're going to go to the

131
00:06:24,920 --> 00:06:23,669
station which of course you've been to

132
00:06:27,620 --> 00:06:24,930
for me you spend if you spent a year of

133
00:06:30,050 --> 00:06:27,630
your life on the space station yes 2.5

134
00:06:31,820 --> 00:06:30,060
percent of my life 2.5 percent of your

135
00:06:35,270 --> 00:06:31,830
life it's been on the space station

136
00:06:36,890 --> 00:06:35,280
how many 0.4% how many how long how much

137
00:06:38,559 --> 00:06:36,900
time have you had is it it's over a year

138
00:06:41,139 --> 00:06:38,569

I did

139

00:06:43,659 --> 00:06:41,149

a little over a year of your life and

140

00:06:46,760 --> 00:06:43,669

now you just go on for 14 days got like

141

00:06:46,770 --> 00:06:51,549

it'll have a good run good luck break

142

00:06:57,549 --> 00:06:54,189

hey Martin so Greg was telling me that

143

00:07:01,239 --> 00:06:57,559

the last time he was a great shaman up

144

00:07:03,039 --> 00:07:01,249

there has what we call him now passed by

145

00:07:04,839 --> 00:07:03,049

so tasman I've known him a long time now

146

00:07:05,409 --> 00:07:04,849

long honestly we went to grad school

147

00:07:08,529 --> 00:07:05,419

together

148

00:07:09,849 --> 00:07:08,539

no in Greta in graduate school that's a

149

00:07:11,459 --> 00:07:09,859

smart dude if you tried

150

00:07:13,599 --> 00:07:11,469

does he like murmur and you know when

151
00:07:15,789 --> 00:07:13,609
he's what as smartest guys I've ever met

152
00:07:22,119 --> 00:07:15,799
right now he's like Rain Man I mean a

153
00:07:24,749 --> 00:07:22,129
guy is a smart dude what's up Greg he's

154
00:07:29,319 --> 00:07:28,299
yeah the first time I met this guy I was

155
00:07:32,139 --> 00:07:29,329
studying like two o'clock in the morning

156
00:07:34,719 --> 00:07:32,149
one of his roommates and Irene like that

157
00:07:38,259 --> 00:07:34,729
you know at their kitchen table and yeah

158
00:07:40,029 --> 00:07:38,269
but first time I met him the first time

159
00:07:40,539 --> 00:07:40,039
I met the first one I met this guy give

160
00:07:45,519 --> 00:07:40,549
me the camera

161
00:07:47,079 --> 00:07:45,529
first time I met this guy we were at MIT

162
00:07:48,369 --> 00:07:47,089
in it we couldn't my buddy I couldn't

163
00:07:49,539 --> 00:07:48,379

figure out the homework this guy walks

164

00:07:51,279 --> 00:07:49,549

in it's like 2:00 in the morning right

165

00:07:54,129 --> 00:07:51,289

he just probably got up and he has a

166

00:07:55,239 --> 00:07:54,139

gigantic orange he's feeling is gigantic

167

00:08:02,609 --> 00:07:55,249

it comes over he looks at this so he

168

00:08:07,209 --> 00:08:05,769

okay great just smart dude but he was

169

00:08:09,189 --> 00:08:07,219

telling me mark that the last time he

170

00:08:19,779 --> 00:08:09,199

was in space you took him up there and

171

00:08:21,189 --> 00:08:19,789

you left them behind you did really did

172

00:08:26,079 --> 00:08:21,199

you would you if he said I want to go

173

00:08:27,909 --> 00:08:26,089

would you would you increment you might

174

00:08:29,409 --> 00:08:27,919

get like a visitor well we were three

175

00:08:30,969 --> 00:08:29,419

pretty person crew in the next shuttle

176

00:08:32,920 --> 00:08:30,979

flight wasn't scheduled for six months

177

00:08:35,409 --> 00:08:32,930

whoa pick him up so he had no visitors

178

00:08:37,689 --> 00:08:35,419

so I closed the hatch on okay oh and the

179

00:08:42,669 --> 00:08:37,699

next time anybody new showed up it was

180

00:08:43,869 --> 00:08:42,679

his ride home 180 days later so it was

181

00:08:45,280 --> 00:08:43,879

it kind of like was like dropping your

182

00:08:46,449 --> 00:08:45,290

kids off at college are you haven't

183

00:08:50,290 --> 00:08:46,459

gotten to that point yet but I mean I

184

00:08:51,610 --> 00:08:50,300

was good sorry dude chunk did he cry

185

00:08:53,919 --> 00:08:51,620

he's like don't let me don't leave me

186

00:08:56,970 --> 00:08:53,929

here you would be the big boy about it I

187

00:09:02,100 --> 00:09:00,269

oh you are gonna bring him home this

188

00:09:03,329 --> 00:09:02,110

time yes but he's a little concerned he

189

00:09:07,980 --> 00:09:03,339

actually said I hope mark remembers to

190

00:09:11,260 --> 00:09:07,990

bring me home yeah I think he likes it

191

00:09:15,160 --> 00:09:13,720

yeah I'd like to do it again yeah that's

192

00:09:16,840 --> 00:09:15,170

what he told me I asked me gonna sound

193

00:09:19,900 --> 00:09:16,850

like he was great do it right now again

194

00:09:25,540 --> 00:09:19,910

yeah break you know training and then

195

00:09:27,579 --> 00:09:25,550

about a year yeah that's so Judy this is

196

00:09:31,420 --> 00:09:27,589

your first time to the station so what

197

00:09:34,900 --> 00:09:31,430

are you most excited about volume yeah

198

00:09:38,829 --> 00:09:34,910

why flying flying flying flying like

199

00:09:41,560 --> 00:09:38,839

explain your son is playing football I'm

200

00:09:43,210 --> 00:09:41,570

outside while you're inside when you're

