



1
00:00:10,580 --> 00:00:07,160
result now at the end up finally I'll

2
00:00:14,330 --> 00:00:10,590
mention that there is other evidence for

3
00:00:16,970 --> 00:00:14,340
a solar Association the Purdue people

4
00:00:20,720 --> 00:00:16,980
have their own experiment running in the

5
00:00:24,130 --> 00:00:20,730
laboratory in riverford you is I forget

6
00:00:27,769 --> 00:00:24,140
now this in the air is in the are they

7
00:00:30,730 --> 00:00:27,779
I've got neighbor city anyway they have

8
00:00:34,190 --> 00:00:30,740
found an association between

9
00:00:37,549 --> 00:00:34,200
fluctuations in the decay rate and solar

10
00:00:41,660 --> 00:00:37,559
flares and let's go let's go to the

11
00:00:43,340 --> 00:00:41,670
curve so the green curve the top or the

12
00:00:48,920 --> 00:00:43,350
blue curve is their measurements of

13
00:00:51,500 --> 00:00:48,930

decay rates or actually the number of an

14

00:00:54,410 --> 00:00:51,510

integral of the number of counts the

15

00:00:57,889 --> 00:00:54,420

green curve is a straight line which was

16

00:01:01,340 --> 00:00:57,899

the blue line would follow if the decay

17

00:01:03,860 --> 00:01:01,350

rate were constant the red line is a

18

00:01:06,469 --> 00:01:03,870

measurement of x-ray data from flares

19

00:01:09,170 --> 00:01:06,479

that measurement from ago satellite that

20

00:01:14,929 --> 00:01:09,180

shows you an flare the car and this is a

21

00:01:19,460 --> 00:01:14,939

an expanded picture showing that at

22

00:01:23,080 --> 00:01:19,470

times of certain flares like this one

23

00:01:26,450 --> 00:01:23,090

the decay rate has dropped significantly

24

00:01:28,070 --> 00:01:26,460

now what's really interesting here if

25

00:01:30,319 --> 00:01:28,080

this is a real association we need to

26

00:01:34,520 --> 00:01:30,329

check this what's really interesting is

27

00:01:38,590 --> 00:01:34,530

that the decay rate begins to drop

28

00:01:44,050 --> 00:01:38,600

before the flare and if this is a real

29

00:01:46,310 --> 00:01:44,060

phenomenon it's going to be a predictive

30

00:01:48,800 --> 00:01:46,320

process that we are predict when if

31

00:01:51,319 --> 00:01:48,810

there's going to happen by monitoring a

32

00:01:54,800 --> 00:01:51,329

decay rate of elements how could this

33

00:01:57,709 --> 00:01:54,810

possibly happen well we know the flare

34

00:02:02,359 --> 00:01:57,719

that use magnetic fields at the surface

35

00:02:04,010 --> 00:02:02,369

of the sun in certain complex fields

36

00:02:09,219 --> 00:02:04,020

with strong field would give rise to

37

00:02:10,940 --> 00:02:09,229

flares we know that the neutrino flux is

38

00:02:12,290 --> 00:02:10,950

influenced or can

39

00:02:14,809 --> 00:02:12,300

influenced by the internal magnetic

40

00:02:17,780 --> 00:02:14,819

field and so the interpretation would be

41

00:02:19,940 --> 00:02:17,790

but a very strong flux tube is bubbling

42

00:02:22,550 --> 00:02:19,950

up from deep down in the Sun towards the

43

00:02:24,460 --> 00:02:22,560

surface as it bubbles up it begins to

44

00:02:28,009 --> 00:02:24,470

interfere with the flux of neutrinos

45

00:02:30,410 --> 00:02:28,019

that gives rise to a decay to drop in

46

00:02:32,990 --> 00:02:30,420

the decay rate when that flux tube

47

00:02:35,120 --> 00:02:33,000

arrives are at the surface this big

48

00:02:38,229 --> 00:02:35,130

complex flux tube begins to become

49

00:02:40,369 --> 00:02:38,239

unstable and gives rise to flares so

50

00:02:42,410 --> 00:02:40,379

this is something that really needs to

51
00:02:45,199 --> 00:02:42,420
be followed up very carefully it's great

52
00:02:48,530 --> 00:02:45,209
interest to the Air Force and probably

53
00:02:50,479 --> 00:02:48,540
other agencies to this is where we are I

54
00:02:53,110 --> 00:02:50,489
think it's a very exciting project so

55
00:02:56,870 --> 00:02:53,120
sum up they're very strong evidence that

56
00:03:01,580 --> 00:02:56,880
the decay rates of radioactive elements

57
00:03:04,130 --> 00:03:01,590
does vary with time I believe that good

58
00:03:06,949 --> 00:03:04,140
evidence that there is an association

59
00:03:26,629 --> 00:03:06,959
with neutrino flux that is something

60
00:03:30,759 --> 00:03:26,639
that remains to be further studied we

61
00:03:57,699 --> 00:03:30,769
have plenty of time for questions

62
00:04:04,819 --> 00:04:00,589
it takes certain magnet fuel

63
00:04:07,520 --> 00:04:04,829

configurations to influence internal my

64

00:04:09,920 --> 00:04:07,530

nephew Institute to to to influence a

65

00:04:13,729 --> 00:04:09,930

new fee no flux and so it's quite

66

00:04:15,319 --> 00:04:13,739

possible that certain flux tubes have

67

00:04:17,810 --> 00:04:15,329

the right orientation and the right

68

00:04:20,330 --> 00:04:17,820

strength to affect the decay rates other

69

00:04:22,460 --> 00:04:20,340

flux tubes have the wrong orientation or

70

00:04:36,549 --> 00:04:22,470

the wrong strength and they do not

71

00:04:45,559 --> 00:04:41,959

I'm going to another Island in Okinawa

72

00:05:04,519 --> 00:04:45,569

state in Japan in July to do an eclipse

73

00:05:08,089 --> 00:05:04,529

to take part in Eclipse experiment some

74

00:05:14,100 --> 00:05:08,099

and yet we don't normally do random

75

00:05:20,960 --> 00:05:17,570

just wondering in light of these days

76

00:05:23,910 --> 00:05:20,970

we need to reconsider how we interpret

77

00:05:32,510 --> 00:05:23,920

what a radioactive decay process

78

00:05:40,140 --> 00:05:37,200

yes do we need to reconsider what we

79

00:05:41,940 --> 00:05:40,150

meet by random process since we normally

80

00:05:46,530 --> 00:05:41,950

think of a random process is one that is

81

00:05:48,720 --> 00:05:46,540

a constant in time a certain fixed event

82

00:05:54,110 --> 00:05:48,730

rate and time and here we have event

83

00:05:56,990 --> 00:05:54,120

rates that vary in time and I think

84

00:06:02,400 --> 00:05:57,000

they're probably in physics many I mean

85

00:06:05,310 --> 00:06:02,410

in in chemistry you have chemical

86

00:06:08,450 --> 00:06:05,320

reactions going on if you look at it in

87

00:06:11,820 --> 00:06:08,460

a microsecond time scale it might be

88

00:06:15,240 --> 00:06:11,830

looking random looking on a two-day

89

00:06:19,250 --> 00:06:15,250

timescale it looks perfectly steady so I

90

00:06:22,800 --> 00:06:19,260

think that there are many cases where

91

00:06:24,510 --> 00:06:22,810

phenomenon where events occur that a

92

00:06:27,210 --> 00:06:24,520

random if you look at the most short

93

00:06:30,390 --> 00:06:27,220

time scale but not randoms you come on a

94

00:06:32,490 --> 00:06:30,400

long time scale I'll ask further people

95

00:06:34,770 --> 00:06:32,500

asking questions who please speak up

96

00:06:47,200 --> 00:06:34,780

loudly so that the whole room can hear

97

00:06:54,370 --> 00:06:50,920

and about 25 years ago under the massive

98

00:07:00,480 --> 00:06:54,380

screening of biological processes vs vs

99

00:07:05,910 --> 00:07:03,820

yes libraries news and I kept getting

100

00:07:08,010 --> 00:07:05,920

very

101
00:07:13,740 --> 00:07:08,020
with

102
00:07:22,030 --> 00:07:13,750
so perhaps

103
00:07:27,910 --> 00:07:26,119
processes possibility

104
00:07:31,000 --> 00:07:27,920
ass is

105
00:07:39,940 --> 00:07:31,010
patience for the operation of atomic

106
00:07:44,110 --> 00:07:39,950
clocks implications with other of atomic

107
00:07:45,970 --> 00:07:44,120
clocks a good one I mean if the elements

108
00:07:50,620 --> 00:07:45,980
involved are elements would have been

109
00:07:52,720 --> 00:07:50,630
found to vary in time the hey rates then

110
00:07:56,140 --> 00:07:52,730
obviously you have to be says you have

111
00:07:59,440 --> 00:07:56,150
to reconsider what you consider to be a

112
00:08:01,420 --> 00:07:59,450
stable clock the first point I'd love to

113
00:08:03,700 --> 00:08:01,430

get hold of your data on these

114

00:08:15,490 --> 00:08:03,710

biological processes and compare them

115

00:08:17,680 --> 00:08:15,500

with neutrinos and other data yeah there

116

00:08:33,570 --> 00:08:17,690

are museums with those pieces of

117

00:08:45,010 --> 00:08:38,490

years old so we had sort of the same

118

00:08:48,000 --> 00:08:45,020

number but we see that things look at

119

00:08:50,590 --> 00:08:48,010

this kind of see things like overs and

120

00:08:54,130 --> 00:08:50,600

other processes may be that we can't

121

00:08:57,180 --> 00:08:54,140

detail doesn't this really called into

122

00:09:02,360 --> 00:08:57,190

question some of our radioactive 80

123

00:09:09,630 --> 00:09:05,250

the question is this corner question our

124

00:09:11,520 --> 00:09:09,640

youth of radioactive dating and the

125

00:09:13,140 --> 00:09:11,530

possibly one has to look at the elements

126

00:09:16,290 --> 00:09:13,150

involved and look at this annual

127

00:09:20,070 --> 00:09:16,300

variation data and see if any I think it

128

00:09:23,490 --> 00:09:20,080

means that we need to look much more

129

00:09:26,460 --> 00:09:23,500

closely at decay rate estimates and what

130

00:09:29,430 --> 00:09:26,470

typically you see people follow up decay

131

00:09:30,870 --> 00:09:29,440

rates for a year and you know smooth

132

00:09:32,820 --> 00:09:30,880

things out and that gives an average

133

00:09:35,520 --> 00:09:32,830

decay rate what they think is the decay

134

00:09:38,280 --> 00:09:35,530

rate if you know decay rate varies in

135

00:09:41,400 --> 00:09:38,290

time obviously you're going to have to

136

00:09:43,950 --> 00:09:41,410

take much longer measurements much more

137

00:09:46,560 --> 00:09:43,960

carefully and then in future you have to

138

00:09:55,380 --> 00:09:46,570

take into account time variation of

139

00:09:58,260 --> 00:09:55,390

decay rate sort of all hollow question