1
00:00:04,030 --> 00:00:08,020
Music

2
00:00:08,040 --> 00:00:12,040
Dr. Charles Bennett: A brand new

3
00:00:12,060 --> 00:00:16,070
discovery from these observations is that we have

4
00:00:16,090 --> 00:00:20,100
detected the era where the very first stars in the universe ignited.

5
00:00:20,120 --> 00:00:24,130
And this era was for many, surprisingly early. It's only about two

6
00:00:24,150 --> 00:00:28,160
hundred million years after the Big Bang from the time that you had the

7
00:00:28,180 --> 00:00:32,180
intense concentration of all kinds of

8
00:00:32,200 --> 00:00:36,200
exotic particles, to the time when gas clouds can form and condense and form

9
00:00:36,220 --> 00:00:40,230
stars. So we've detected that era for the first time

10
00:00:40,250 --> 00:00:44,260
and it is very early. Well because it takes the light over

11
00:00:44,280 --> 00:00:48,290
13 billion years to reach us, we are seeing now what the universe looked like

12
00:00:48,310 --> 00:00:52,330
then--over 13 billion years ago. So its a fossil

13
00:00:52,350 --> 00:00:56,370

remnant of what the early universe was like and just

14
00:00:56,390 --> 00:01:00,390
fossils are used to study the past, we use this light to study what the universe

15
00:01:00,410 --> 00:01:04,430
what it's like way back near the very beginning.

16
00:01:04,450 --> 00:01:08,460
Dr. Lyman Page: What is the map? Well that picture behind me is really, it's an

17
00:01:08,480 --> 00:01:12,480
image of the whole sky. And its made

18
00:01:12,500 --> 00:01:16,510
to image the whole sky on this oval and you can see

19
00:01:16,530 --> 00:01:20,550
in there blue spots and red spots. And what

20
00:01:20,570 --> 00:01:24,590
those correspond to are slightly hotter and colder images of the

21
00:01:24,610 --> 00:01:28,630
sky. That's a picture there, those hot and cold spots

22
00:01:28,650 --> 00:01:32,660
that pattern, its really the, its the after glow of the Big Bang.

23
00:01:32,680 --> 00:01:36,680
Dr Bennett: We determine using this cosmic consistency the

24
00:01:36,700 --> 00:01:40,720
age of the universe is 13.7 billion years old.

25
00:01:40,740 --> 00:01:44,750
And we've made that determination to 1% accuracy which

26
00:01:44,770 --> 00:01:48,790
is just amazing. Dr. Page: On a sort of deeper

27
00:01:48,810 --> 00:01:52,810
long term level its this

28
00:01:52,830 --> 00:01:56,830
amazing consistency that the picture we can put together of the

29
00:01:56,850 --> 00:02:00,850
universe is relatively simple that the

30
00:02:00,870 --> 00:02:04,860
pieces fit together, its a stunning confirmation

31
00:02:04,880 --> 00:02:08,870
of this, of the study of cosmology from many years now.

32
00:02:08,890 --> 00:02:12,900
Its just built up and here it is. In some ways we're getting

33
00:02:12,920 --> 00:02:16,930
to know the cosmos like we know our own backyards. Its the universe has

34
00:02:16,950 --> 00:02:20,960
all of a sudden has gotten smaller and much more familiar.