
NASA
Hubble's Inside The Image
Earendel

1
00:00:00,299 --> 00:00:04,440
foreign

2
00:00:15,709 --> 00:00:12,370
[Music]

3
00:00:17,930 --> 00:00:15,719
Space Telescope of the sunrise Arc which

4
00:00:19,970 --> 00:00:17,940
is this long red banana that you can see

5
00:00:21,830 --> 00:00:19,980
on the the screen right there and then

6
00:00:25,130 --> 00:00:21,840
what's highlighted by that white arrow

7
00:00:26,750 --> 00:00:25,140
is the lens star arendo which is the

8
00:00:28,970 --> 00:00:26,760
most distant star that's been observed

9
00:00:32,810 --> 00:00:28,980
so far so we're seeing this entire

10
00:00:34,010 --> 00:00:32,820
galaxy as it was about 13 billion years

11
00:00:36,229 --> 00:00:34,020
ago

12
00:00:38,150 --> 00:00:36,239
this particular Discovery was thanks to

13
00:00:39,590 --> 00:00:38,160

gravitational lensing so what you can

14
00:00:41,450 --> 00:00:39,600
kind of see in the background here with

15
00:00:43,490 --> 00:00:41,460
all these sort of yellowish galaxies

16
00:00:45,770 --> 00:00:43,500
those are all galaxies that are part of

17
00:00:47,690 --> 00:00:45,780
a galaxy cluster and this galaxy cluster

18
00:00:50,150 --> 00:00:47,700
is a very massive object that actually

19
00:00:51,470 --> 00:00:50,160
bends the the space time around it and

20
00:00:53,810 --> 00:00:51,480
as the light from this distant Galaxy

21
00:00:56,990 --> 00:00:53,820
passes through that distorted space time

22
00:00:58,970 --> 00:00:57,000
it gets magnified and stretched out into

23
00:01:00,709 --> 00:00:58,980
this long Arc that we see

24
00:01:03,110 --> 00:01:00,719
because of exactly where all these

25
00:01:04,910 --> 00:01:03,120
galaxies are there is a peak right here

26
00:01:07,490 --> 00:01:04,920
right on this point where the

27
00:01:09,109 --> 00:01:07,500
magnification starts to to Skyrocket so

28
00:01:10,670 --> 00:01:09,119
it starts to become an incredibly High

29
00:01:12,170 --> 00:01:10,680
magnification just right in that spot

30
00:01:15,350 --> 00:01:12,180
and that's how we're able to see this

31
00:01:17,450 --> 00:01:15,360
one star original image looks like this

32
00:01:19,070 --> 00:01:17,460
so this is where you can see you know

33
00:01:21,590 --> 00:01:19,080
all of these sort of fuzzy yellow

34
00:01:22,969 --> 00:01:21,600
galaxies around here form a pretty clear

35
00:01:25,190 --> 00:01:22,979
cluster

36
00:01:28,190 --> 00:01:25,200
you can still kind of see this faint red

37
00:01:29,749 --> 00:01:28,200
Arc down here at the bottom and that was

38
00:01:31,550 --> 00:01:29,759

what piqued our interest originally

39
00:01:33,530 --> 00:01:31,560
anything that's that red is going to be

40
00:01:35,270 --> 00:01:33,540
at a very high red shift which means

41
00:01:37,490 --> 00:01:35,280
it's very early in the universe so that

42
00:01:39,170 --> 00:01:37,500
was kind of why we first got interested

43
00:01:41,929 --> 00:01:39,180
you can also see just kind of how long

44
00:01:44,929 --> 00:01:41,939
this object is so this is the the

45
00:01:46,789 --> 00:01:44,939
longest lensed Arc that we've seen at

46
00:01:48,410 --> 00:01:46,799
redshift six or above so that's within

47
00:01:51,289 --> 00:01:48,420
the first billion years of the universe

48
00:01:53,929 --> 00:01:51,299
and it kind of opens the door to looking

49
00:01:56,630 --> 00:01:53,939
at the very first generation of stars so

50
00:01:58,249 --> 00:01:56,640
very first Stars would form you know a

51
00:01:59,569 --> 00:01:58,259
few hundred million years maybe one to

52
00:02:01,609 --> 00:01:59,579
three hundred million years after the

53
00:02:03,289 --> 00:02:01,619
big bang is kind of that ballpark so

54
00:02:05,569 --> 00:02:03,299
this kind of gives us a foot in that

55
00:02:07,789 --> 00:02:05,579
door that gives us a really good chance

56
00:02:09,529 --> 00:02:07,799
to continue to discover more of these

57
00:02:11,390 --> 00:02:09,539
objects and you know hopefully push that

58
00:02:13,130 --> 00:02:11,400
boundary a little bit further and really

59
00:02:15,350 --> 00:02:13,140
get a chance to to find one of the very