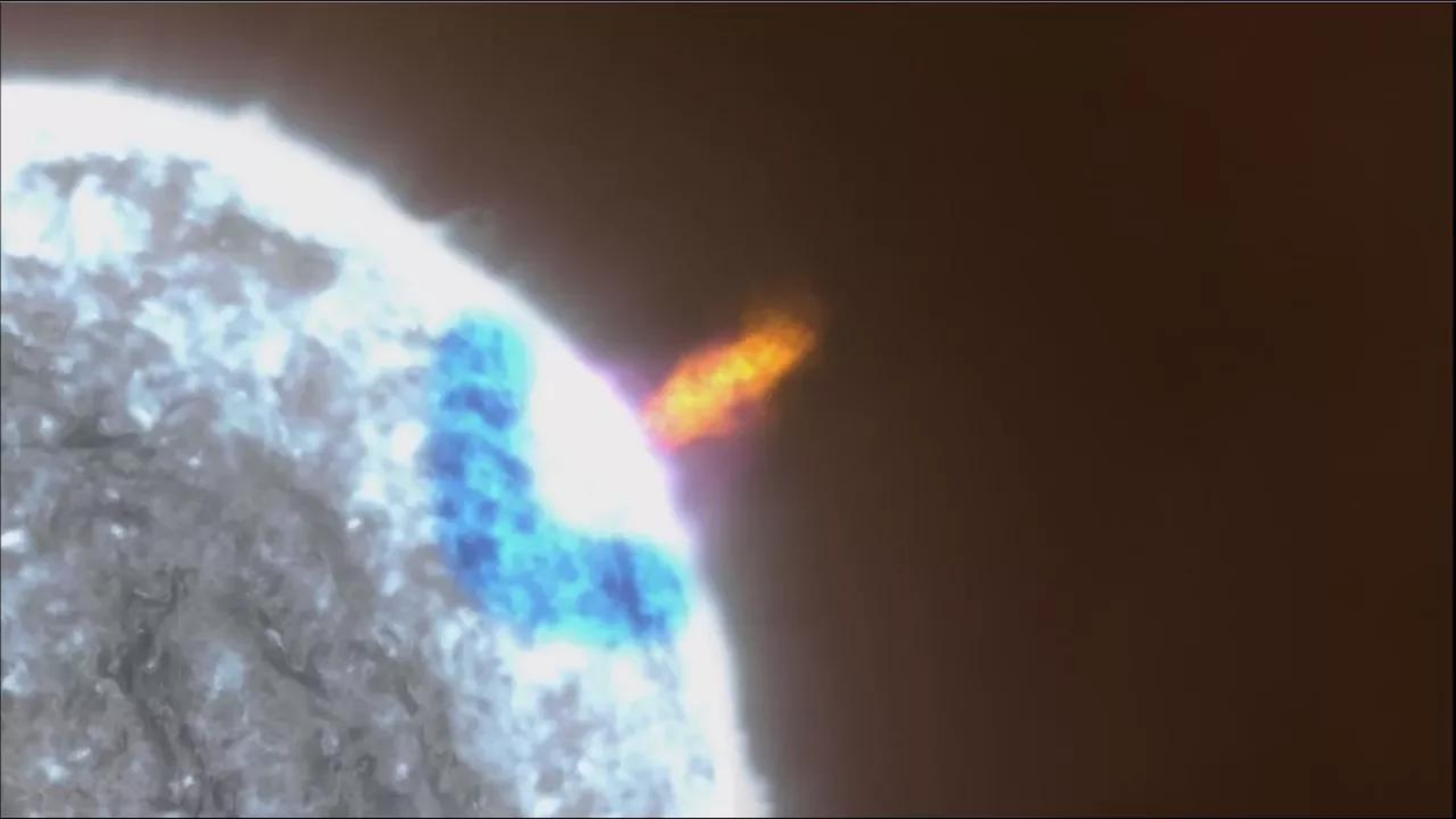

1
00:00:02,382 --> 00:00:08,730
On August 17, Fermi GBM saw what

2
00:00:08,765 --> 00:00:10,762
we call a short gamma-ray burst.

3
00:00:10,797 --> 00:00:13,267
By itself, it wasnít anything

4
00:00:13,302 --> 00:00:14,834
impressive. Itís like lots of

5
00:00:14,869 --> 00:00:16,571
events weíve seen before. It was

6
00:00:16,606 --> 00:00:17,794
when we got the notice from the

7
00:00:17,829 --> 00:00:19,274
LIGO people. Actually, the email

8
00:00:19,309 --> 00:00:20,737
said, "wake up." They had seen

9
00:00:20,772 --> 00:00:22,817
something, too, that made this

10
00:00:22,852 --> 00:00:24,577
so exciting. There was a very

11
00:00:24,612 --> 00:00:26,395
clear gravitational wave signal

12
00:00:26,430 --> 00:00:27,922
in our data. And not just any

13
00:00:27,957 --> 00:00:29,082

old gravitational wave but that

14
00:00:29,117 --> 00:00:30,459
of a binary neutron star merger,

15
00:00:30,494 --> 00:00:31,730
which we had never seen before.

16
00:00:31,765 --> 00:00:33,178
Neutron stars are made of the

17
00:00:33,213 --> 00:00:34,611
densest matter you can have in

18
00:00:34,646 --> 00:00:36,986
the universe before you get to

19
00:00:37,021 --> 00:00:38,826
a black hole. So these are very

20
00:00:38,861 --> 00:00:40,257
exciting objects. And these were

21
00:00:40,292 --> 00:00:41,458
the objects that were predicted

22
00:00:41,493 --> 00:00:43,002
to produce the short gamma-ray

23
00:00:43,037 --> 00:00:45,098
bursts that we see with GBM. This

24
00:00:45,133 --> 00:00:46,531
new way of learning about the

25
00:00:46,566 --> 00:00:48,411
universe is kind of like gaining

26
00:00:48,446 --> 00:00:50,138
a new sense. So it's as if we've

27
00:00:50,173 --> 00:00:52,146
been watching the news for all

28
00:00:52,181 --> 00:00:53,658
of human history, but the TV has

29
00:00:53,693 --> 00:00:55,482
been on mute. And now with

30
00:00:55,517 --> 00:00:56,809
gravitational wave detectors

31
00:00:56,844 --> 00:00:58,241
we're able to turn on the sound.

32
00:00:58,276 --> 00:00:59,513
I think what excites me the most

33
00:00:59,548 --> 00:01:01,018
about this discovery is that

34
00:01:01,053 --> 00:01:02,507
we canÖ we're putting together

35
00:01:02,542 --> 00:01:04,098
traditional astronomy and the

36
00:01:04,133 --> 00:01:05,514
new, brand new field of

37
00:01:05,549 --> 00:01:06,762
gravitational wave astronomy

38
00:01:06,797 --> 00:01:08,106

to learn brand new physics

39
00:01:08,141 --> 00:01:09,330
that we couldn't do in any other

40
00:01:09,365 --> 00:01:10,770
way.We do consider ourselves

41
00:01:10,805 --> 00:01:12,226
explorers. This is the very

42
00:01:12,261 --> 00:01:14,179
frontier of human knowledge.

43
00:01:14,214 --> 00:01:16,633
We're learning about fundamental

44
00:01:16,668 --> 00:01:18,434
forces in nature like gravity.

45
00:01:18,469 --> 00:01:20,178
We're learning about how the

46
00:01:20,213 --> 00:01:22,066
interiors of neutron stars,

47
00:01:22,101 --> 00:01:23,507
which are a very mysterious

48
00:01:23,542 --> 00:01:26,066
place, behave. We're learning

49
00:01:26,101 --> 00:01:27,970
about brand new astronomical

50
00:01:28,005 --> 00:01:30,778
phenomena in other galaxies.

51
00:01:30,813 --> 00:01:33,025
So we're right there at the

52
00:01:33,060 --> 00:01:34,713
edge, and because of this event,