
GRB 150101B
X-ray

1
00:00:07,510 --> 00:00:04,710
on october 16 2017

2
00:00:10,390 --> 00:00:07,520
astronomers excitedly reported the first

3
00:00:14,709 --> 00:00:10,400
detection of electromagnetic waves or

4
00:00:16,550 --> 00:00:14,719
light from a gravitational wave source

5
00:00:18,630 --> 00:00:16,560
now a year later

6
00:00:20,950 --> 00:00:18,640
researchers are announcing the existence

7
00:00:22,630 --> 00:00:20,960
of a cosmic relative to that historic

8
00:00:25,029 --> 00:00:22,640
event

9
00:00:27,509 --> 00:00:25,039
the discovery was made using data from a

10
00:00:31,109 --> 00:00:27,519
host of telescopes including nasa's

11
00:00:33,190 --> 00:00:31,119
chandra x-ray observatory

12
00:00:37,030 --> 00:00:33,200
the object of the new study called

13
00:00:44,389 --> 00:00:39,990

was first reported as a gamma-ray burst

14
00:00:45,990 --> 00:00:44,399
detected by fermi in january 2015.

15
00:00:48,869 --> 00:00:46,000
this detection and follow-up

16
00:00:51,110 --> 00:00:48,879
observations show that this new object

17
00:00:53,430 --> 00:00:51,120
shares remarkable similarities to the

18
00:00:55,830 --> 00:00:53,440
neutron star merger and gravitational

19
00:00:58,630 --> 00:00:55,840
wave source discovered by the advanced

20
00:01:00,229 --> 00:00:58,640
laser interferometer gravitational wave

21
00:01:02,950 --> 00:01:00,239
observatory

22
00:01:04,710 --> 00:01:02,960
and its european counterpart virgo in

23
00:01:09,109 --> 00:01:04,720
2017

24
00:01:13,429 --> 00:01:11,109
the latest study concludes that these

25
00:01:14,950 --> 00:01:13,439
two separate objects may in fact be

26
00:01:19,830 --> 00:01:14,960
related

27
00:01:21,390 --> 00:01:19,840
the researchers think both grb 150 101b

28
00:01:24,390 --> 00:01:21,400
and

29
00:01:26,550 --> 00:01:24,400
gw170817 were most likely produced by

30
00:01:29,749 --> 00:01:26,560
the same type of event

31
00:01:31,590 --> 00:01:29,759
the merger of two neutron stars

32
00:01:34,469 --> 00:01:31,600
this is a catastrophic collision that

33
00:01:36,630 --> 00:01:34,479
generated a narrow jet or beam of high

34
00:01:39,109 --> 00:01:36,640
energy particles

35
00:01:40,390 --> 00:01:39,119
the jet produced a short intense burst

36
00:01:42,789 --> 00:01:40,400
of gamma rays

37
00:01:44,389 --> 00:01:42,799
a high energy flash that can last only

38
00:01:46,710 --> 00:01:44,399

seconds

39
00:01:49,590 --> 00:01:46,720
this was followed by an afterglow in

40
00:01:51,749 --> 00:01:49,600
optical light that lasted a few days

41
00:01:54,469 --> 00:01:51,759
an x-ray emission that lasted much

42
00:01:56,469 --> 00:01:54,479
longer

43
00:01:58,469 --> 00:01:56,479
scientists think both of these events

44
00:02:01,270 --> 00:01:58,479
involved kilonovas

45
00:02:03,749 --> 00:02:01,280
that is powerful explosions that release

46
00:02:07,910 --> 00:02:03,759
large amounts of energy and can produce

47
00:02:09,669 --> 00:02:07,920
elements like gold platinum and uranium

48
00:02:13,750 --> 00:02:09,679
understanding these explosions helps

49
00:02:15,270 --> 00:02:13,760
astronomers trace our cosmic ancestry

50
00:02:16,550 --> 00:02:15,280
there is still a lot to learn about

51
00:02:18,710 --> 00:02:16,560
these events

52
00:02:21,750 --> 00:02:18,720
but chandra is poised to help in this

53
00:02:24,470 --> 00:02:21,760
new era of combined gravitational wave

54
00:02:35,400 --> 00:02:24,480
and electromagnetic investigations