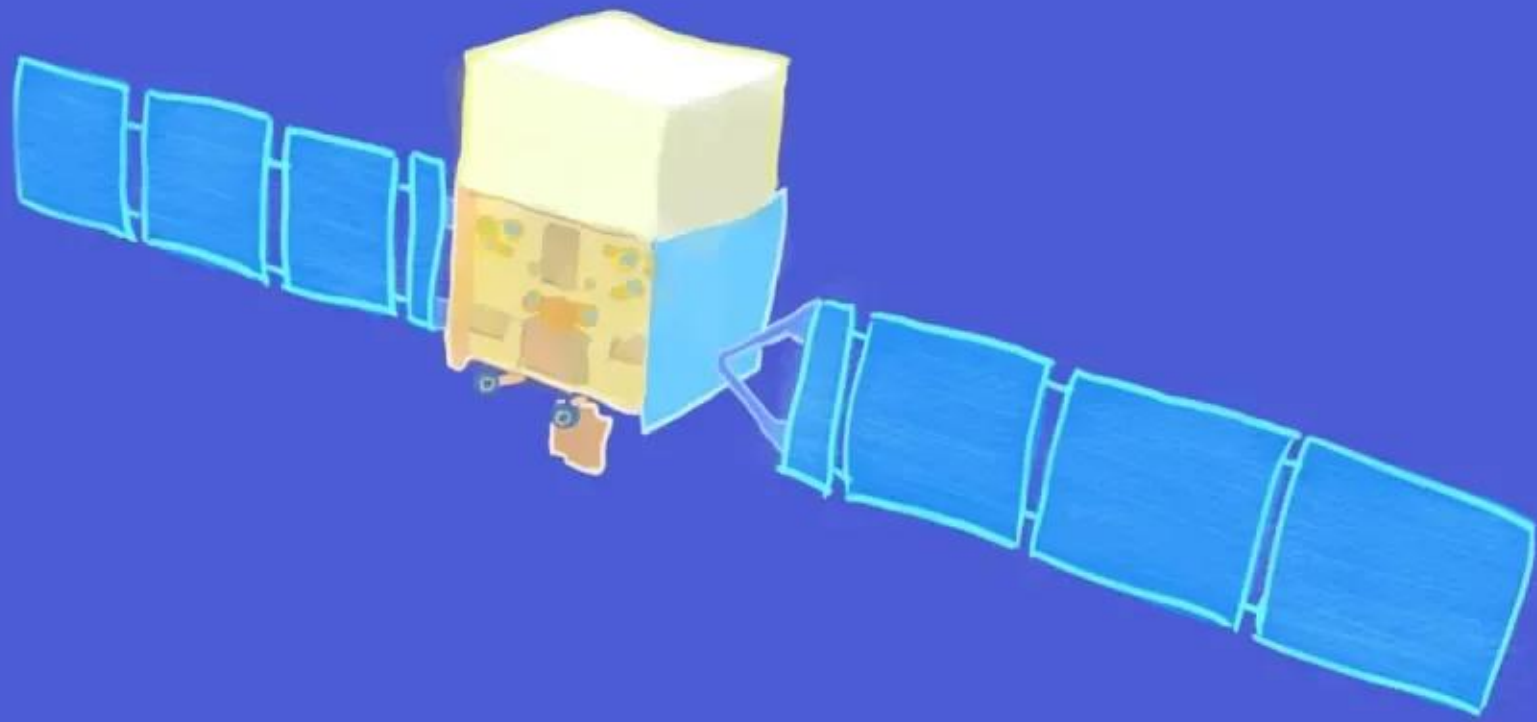

1
00:00:02,440 --> 00:00:05,500
The Gamma-Ray Burst Monitor is one of

2
00:00:05,500 --> 00:00:08,020
the instruments on the Fermi Gamma-ray Space Telescope

3
00:00:08,020 --> 00:00:12,060
— designed to detect gamma-ray bursts. Gamma-ray bursts can be observed in every

4
00:00:12,250 --> 00:00:16,300
corner of the universe. Emitted from the extremely energetic collapse of massive

5
00:00:16,300 --> 00:00:19,840
stars and the merging cores of dead stars.

6
00:00:19,840 --> 00:00:23,860
The Gamma-Ray Burst Monitor, also known as GBM, is an instrument

7
00:00:23,860 --> 00:00:28,000
used to detect these bright flashes and give scientists information from across

8
00:00:28,020 --> 00:00:32,080
the universe. The GBM uses a few simple processes to collect

9
00:00:32,080 --> 00:00:36,300
data. There are twelve low-energy detectors, and two higher-energy

10
00:00:36,320 --> 00:00:40,720
detectors, pointed in different orientations that together cover the whole sky.

11
00:00:40,840 --> 00:00:44,760
When gamma rays enter these detectors, they interact

12
00:00:44,760 --> 00:00:48,680
with crystals in the instrument. The more energetic the gamma ray, the more

13
00:00:48,680 --> 00:00:52,560

light is produced in the crystals. By seeing which crystals light up,

14
00:00:52,740 --> 00:00:56,740
the GBM can tell which direction the gamma-ray bursts are coming from.

15
00:00:56,740 --> 00:01:01,060
This process is called localization. Shining about a quadrillion times brighter than

16
00:01:01,080 --> 00:01:05,220
the Sun, gamma rays are the first light to be detected from a gamma-ray burst.

17
00:01:05,400 --> 00:01:09,450
Rapid localization informs other telescopes both on the ground and in space

18
00:01:09,450 --> 00:01:13,100
where to look. GBM observations of the brightest

19
00:01:13,100 --> 00:01:17,300
explosions in the universe allow scientists to better understand these unique sources.

20
00:01:17,720 --> 00:01:20,820
[Music fades][Beeping]