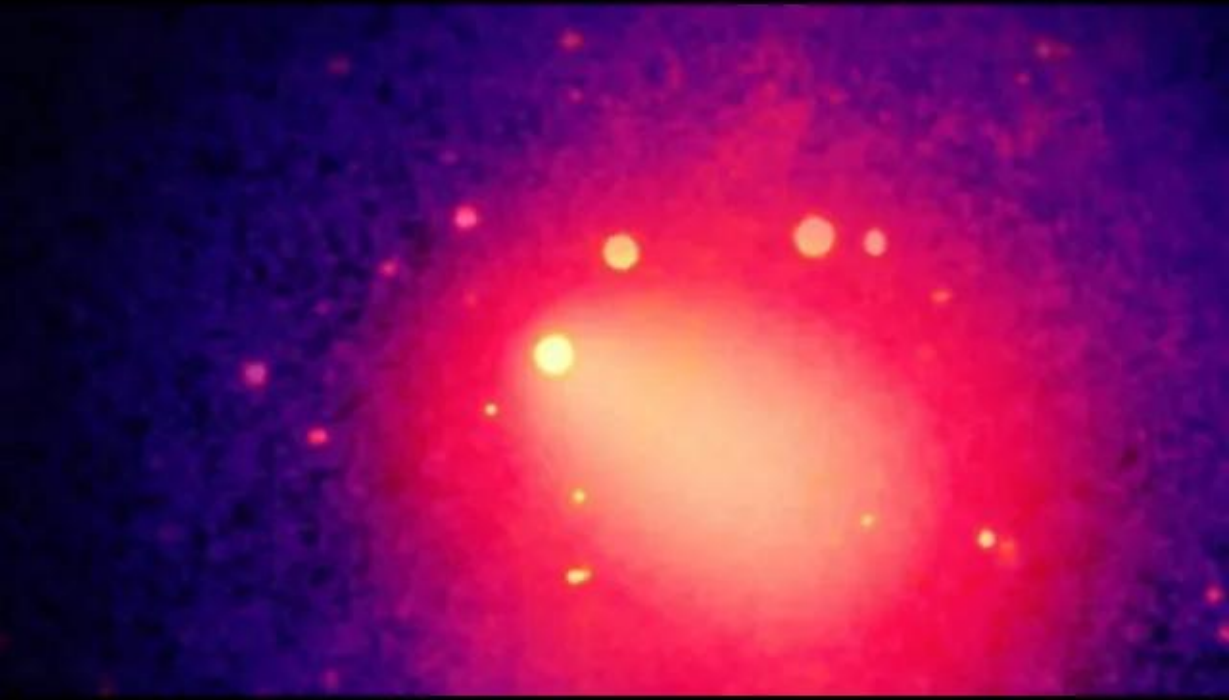

1
00:00:00,000 --> 00:00:03,980
(Music throughout)

2
00:00:06,000 --> 00:00:13,980
This pulsar’s vast gamma-ray halo may explain a key observation about antimatter near Earth.

3
00:00:14,000 --> 00:00:20,980
[Big Dipper to scale]

4
00:00:21,000 --> 00:00:28,980
Pulsars are rapidly spinning neutron stars, the superdense remnants of supernovae explosions.

5
00:00:33,000 --> 00:00:39,980
NASA’s Fermi mission has observed one nearby pulsar, Geminga, for more than 10 years.

6
00:00:43,000 --> 00:00:49,980
The data are now so detailed that when scientists remove background sources…

7
00:00:50,000 --> 00:00:56,980
…Geminga’s faint but huge gamma-ray halo emerges.

8
00:00:58,000 --> 00:01:04,980
This halo precisely matches computer models that account for positron production.

9
00:01:07,000 --> 00:01:13,980
Positrons are antimatter versions of electrons. They’re found near Earth but have no clear origin.

10
00:01:17,000 --> 00:01:24,980
Scientists suspected pulsars to be positron sources. This study confirms it.

11
00:01:25,000 --> 00:01:32,980
As it turns out, Geminga is likely the greatest positron source for Earth.

12
00:01:33,000 --> 00:01:40,980
It alone could produce 20% of the positrons at an energy of 1 TeV seen in orbit.

13
00:01:41,000 --> 00:01:48,980

So pulsars not only shine in the highest-energy light, they also glow in antimatter.