

DEM L241

Optical



1
00:00:02,210 --> 00:00:06,270

Female voice narrates: When a massive star runs out fuel, it collapses and explodes as

2
00:00:06,270 --> 00:00:08,120

a supernova.

3
00:00:08,120 --> 00:00:13,900

Although these explosions are extremely powerful, it is possible for a nearby star to endure

4
00:00:13,900 --> 00:00:15,809

the blast.

5
00:00:15,809 --> 00:00:21,530

A team of astronomers using NASA's Chandra X-ray Observatory and other telescopes has

6
00:00:21,530 --> 00:00:26,189

found evidence for one of these survivors.

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00:00:26,189 --> 00:00:32,009

This hardy star is in a stellar explosion's debris field - also called its supernova remnant

8
00:00:32,009 --> 00:00:37,120

- located in an HII region called DEM L241.

9
00:00:37,120 --> 00:00:45,010

An HII (pronounced "H-two") region is created when the radiation from hot, young stars strips

10
00:00:45,010 --> 00:00:52,570

away the electrons from neutral hydrogen atoms to form clouds of ionized hydrogen.

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00:00:52,570 --> 00:00:58,550

This particular HII region is located in the Large Magellanic Cloud, a small neighboring

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00:00:58,550 --> 00:01:01,510

galaxy to the Milky Way.

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00:01:01,510 --> 00:01:07,930

The supernova remnant remains hot for thousands of years after the original explosion occurred,

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00:01:07,930 --> 00:01:15,310

and this means that it continues to glow brightly in X-rays that can be detected by Chandra.

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00:01:15,310 --> 00:01:20,850

The data suggest that a point-like source in X-rays is one component of a binary star

16

00:01:20,850 --> 00:01:22,460

system.

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00:01:22,460 --> 00:01:27,829

In such a celestial pair, either a neutron star or black hole, which is formed when the

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00:01:27,829 --> 00:01:33,659

star went supernova, is in orbit with a star much larger than our Sun.

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00:01:33,659 --> 00:01:39,270

As they orbit one another, the dense neutron star or black hole pulls material away its

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00:01:39,270 --> 00:01:45,119

companion star through the wind of particles that flows away from its surface.

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00:01:45,119 --> 00:01:52,609

If this result is confirmed, DEM L241 would be only the third binary containing both a