



Chandra Science Highlight

G1.9+0.3: Trigger for Milky Way's Youngest Supernova Identified



Scale:

Image is about 4.1 arcmin across (About 30 light years)

Distance Estimate:

About 27,700 light years

**CXC Operated for NASA by the
Smithsonian Astrophysical Observatory**

A Chandra image of the supernova remnant G1.9+0.3, where low-energy X-rays are colored red, medium-energy X-rays are green, and higher-energy X-rays are blue. Most of the X-ray emission is synchrotron radiation, produced by extremely energetic electrons accelerated in the rapidly expanding blast wave of the supernova.

- ❑ Previous work had identified G1.9+0.3 as the remnant of the most recent supernova in our galaxy. The supernova occurred about 110 years ago in a dusty region of the galaxy that blocked visible light from reaching Earth.
- ❑ The supernova explosion that formed G1.9+0.3 is a Type Ia, resulting from the explosion of a white dwarf. This type of supernova is a “standard candle”, making it an important tool to measure the rate of expansion of the Universe.
- ❑ There is a debate over what triggers these white dwarf explosions. Two primary ideas are the accumulation of material onto a white dwarf from a companion star or the violent merger of two white dwarfs.
- ❑ The increase in X-ray and radio brightness of the remnant observed with Chandra and the VLA strongly favors the trigger mechanism involving the merger of two white dwarfs. A similar technique may help us learn more about other Type Ia supernovas, potentially aiding their use as standard candles.

Reference: Chakraborti, S. et al, 2016, ApJ, 819, 37; arXiv:1510.08851

Credit: X-ray (NASA/CXC/CfA/S.Chakraborti et al.)

Instrument: ACIS



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