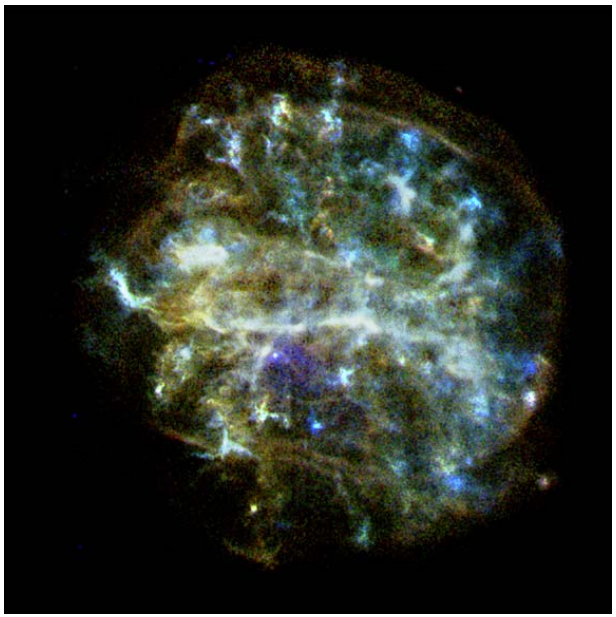
Chandra Science Highlights

G292.0+1.8: A Young Supernova Remnant in the Constellation Centaurus



Chandra's image of G292.0+1.8 shows a rapidly expanding supernova shell of multimillion degree gas that contains large amounts of elements such as oxygen, neon, magnesium silicon and sulfur. Near the center of the remnant is a point-like source (blue) of high-energy X-rays surrounded by energetic features that provide strong evidence for a rapidly spinning neutron star.

(*Credit: NASA/CXC/Rutgers/J.Hughes et al.*.)

Scale: 9 arc minutes on a side

Chandra X-ray Observatory ACIS/HETG image; total exposure time: 11.9 hours

Reference: J.P. Hughes et al. 2001, Astrophys.J. 559, L153

- **Chandra image reveals a central pointlike source embedded in a diffuse nebula in the central region of an oxygen-rich supernova remnant.**
- **The X-ray spectra of the nebular and pointlike source are nonthermal, indicating the presence of a young rapidly rotating neutron star, and its associated pulsar wind nebula.**
- **The X-ray spectrum of the entire supernova remnant is dominated by emission from oxygen, neon, magnesium, silicon and sulfur ions.**
- **The Chandra results prompted radio astronomers to use the Parkes Radio Telescope in Australia to discover a radio pulsar, with a period of 135 milliseconds, at the location of the pointlike X-ray source.**
- **The combined X-ray and radio results confirm that a neutron star was created when the core of a massive star collapsed, triggering an oxygen-rich supernova. Such oxygen-rich remnants are rare; only three are known to exist in our galaxy. They are of great interest to astronomers because they are one of the primary sources of the heavy elements such as oxygen.**

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