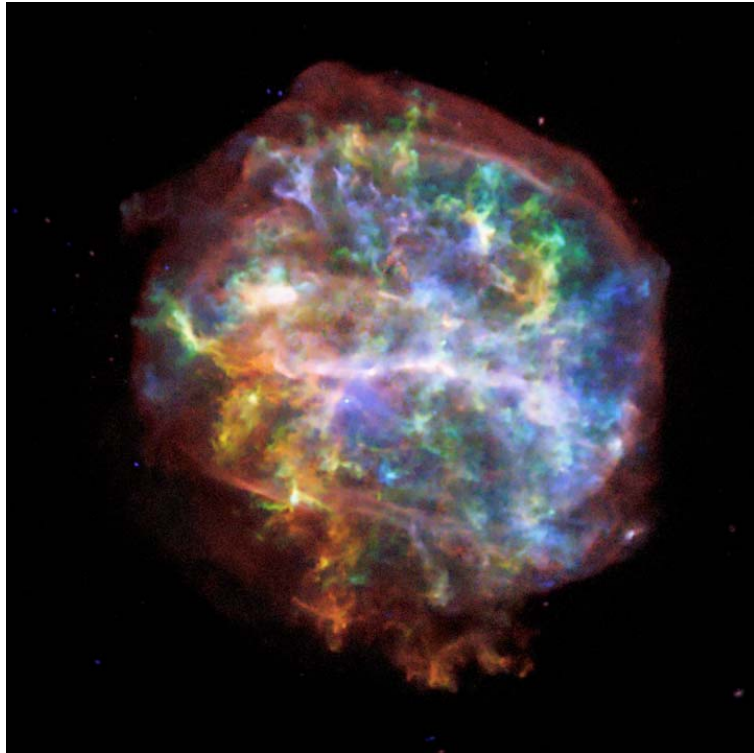




# Chandra Science Highlight

## G292.0+1.8: A YOUNG, OXYGEN-RICH SUPERNOVA REMNANT



Chandra X-ray Observatory ACIS image.  
Scale: image is 11.5 arcmin per side.  
Estimated distance: 20,000 light years

Color Code: X-ray energies:  
Red(0.580-710 and 0.880-950 keV);  
Orange(0.980-1.100 keV)  
Green(1.280-1.430 keV);  
Blue(1.810-2.050 and 2.400-2.620 keV)

This Chandra image of the galactic supernova remnant G292.0+1.8 reveals a rapidly expanding shell that is 50 light years across and contains large amounts of oxygen, neon, and silicon.

- The complex filamentary structure implies an asymmetric supernova explosion with highly clumped ejecta interacting with a nonuniform ambient interstellar medium.
- The red shell-like structure around the outer boundary of the remnant may be caused by a shock wave moving through a shell produced by stellar winds from the red/blue supergiant phases of the massive progenitor star
- The central belt-like structure has solar-type composition, suggesting that this feature is emission from shocked circumstellar material rather than metal-rich ejecta. A possible origin for the belt is a ring-like circumstellar shell produced by slow stellar winds from the massive progenitor in the red supergiant phase.
- Just below the belt at about seven o'clock, higher energy X-ray emission (blue) from a pulsar with its wind nebula can be seen. The detection of the pulsar and its nebula conclusively associates this young, oxygen-rich supernova remnant with a supernova produced by the core-collapse of a massive star. The offset of the pulsar from the center of the nebula may be due to the recoil from an asymmetric explosion.

Reference: S. Park et al, *The Astrophysical Journal*, 670:L121-L124, 2007, also arXiv:0710.2902v1 [astro-ph]

Credit: NASA/CXC/Penn. State Univ./S. Park et al.