



Chandra Science Highlight

RCW 103: A Supernova Remnant with a Mystery in the Middle



Chandra X-ray Observatory ACIS image.

This Chandra image shows RCW 103, the 2,000-year-old-remnant of a supernova located about 10,000 light years from Earth. Red, green, and blue colors are mapped to low, medium, and high-energy X-rays. At the center, the bright blue compact object is likely a neutron star formed when a massive star exploded.

- The central compact object exhibits unusually large variations in its X-ray emission over a period of years.
- New evidence from Chandra implies that the object is a neutron star rotating once every 6.7 hours, confirming recent work from XMM-Newton.
- One possible explanation for the X-ray variability and the unusually slow rotation rate (for a 2,000-year-old neutron star) of the neutron star is that a dim, low-mass star may be orbiting around the neutron star.
- Gas flowing from this unseen companion onto the neutron star might be powering its X-ray emission, and the interaction of the magnetic field of the two stars could have caused the neutron star to slow its rotation.

Reference: G. Garmire et al. 2006, 36th COSPAR Scientific Assembly. p.3451