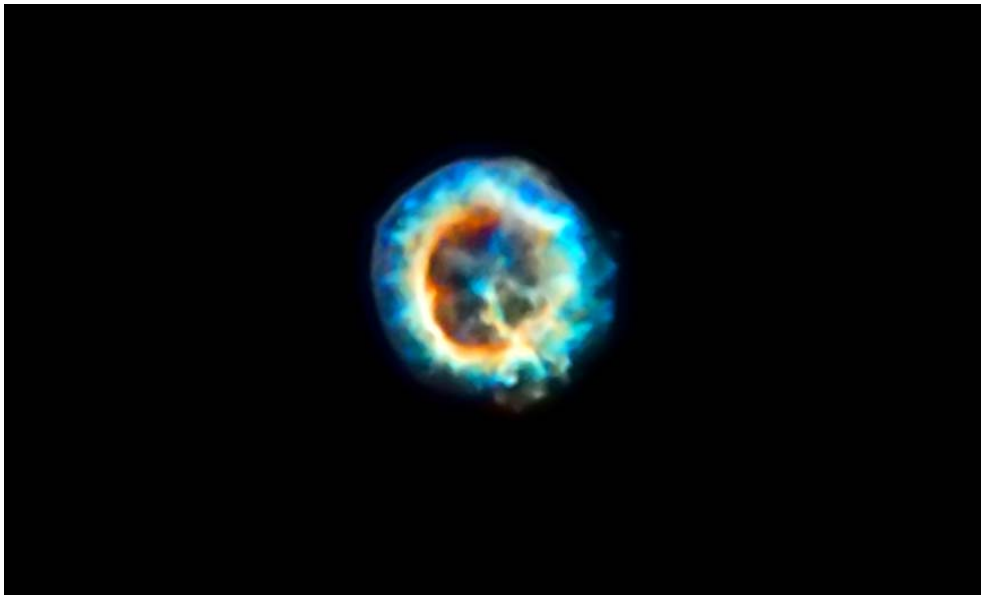
Chandra Science Highlight

E0102-72.3: A Supernova Remnant in the Small Magellanic Cloud



Chandra X-ray Observatory ACIS/High Energy Transmission Grating image

Distance estimate: About 190,000 light years

Diameter of supernova remnant: 18 light years

The Chandra image shows the outer blast wave produced by the supernova (blue = higher energy X-rays), and an inner ring of cooler (red-orange= lower energy X-rays) material. This inner ring is probably expanding ejecta from the explosion that is being heated by a shock wave traveling backwards into the ejecta.

Credit: Credit: (NASA/CXC/MIT/D.Dewey et al. & NASA/CXC/SAO/J.DePasquale)

Reference: K. Flanagan et al. 2004, Astrophys. J. 230, 246

- E0102-72.3 is the ~ 1000-year-old remnant of a very massive star that exploded in the Small Magellanic Cloud, a nearby galaxy.
- X-ray measurements of the Doppler shifts of X-ray emission lines indicates that the remnant is shaped like a cylinder that we see end-on.
- Possible explanations of the asymmetry include an asymmetric explosion, or that the material around the pre-supernova star was concentrated into disk formed when material was shed from the equator of the pre-supernova red giant star.