



**Chandra X-ray
Observatory Center**

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NGC 40: A planetary nebula about 3,000 light years from Earth
(Credit: X-ray: NASA/CXC/RIT/J.Kastner & R.Montez.; Optical: NSF/AURA/NOAO/WIYN)

Caption: This composite X-ray (blue)/optical (red) image of NGC 40 shows hot gas around a dying, Sun-like star. Planetary nebulas get their name because they look like the disk of a planet when viewed with a small telescope. They are in a late stage in their evolution when most of the star's nuclear fusion energy sources have been used up. The star has puffed off its outer layer to leave behind a smaller, hot star with a surface temperature of about 50,000 degrees Celsius. Radiation from the hot star heats the ejected matter to about 10,000 degrees to produce the complex and graceful nebula (red) about a light year across. The X-rays reveal a shell of multimillion degree gas (blue) that has been compressed and heated by a 2-million-miles-per-hour stellar wind from the dying star.

Chandra X-ray Observatory ACIS Image

CXC operated for NASA by the Smithsonian Astrophysical Observatory
