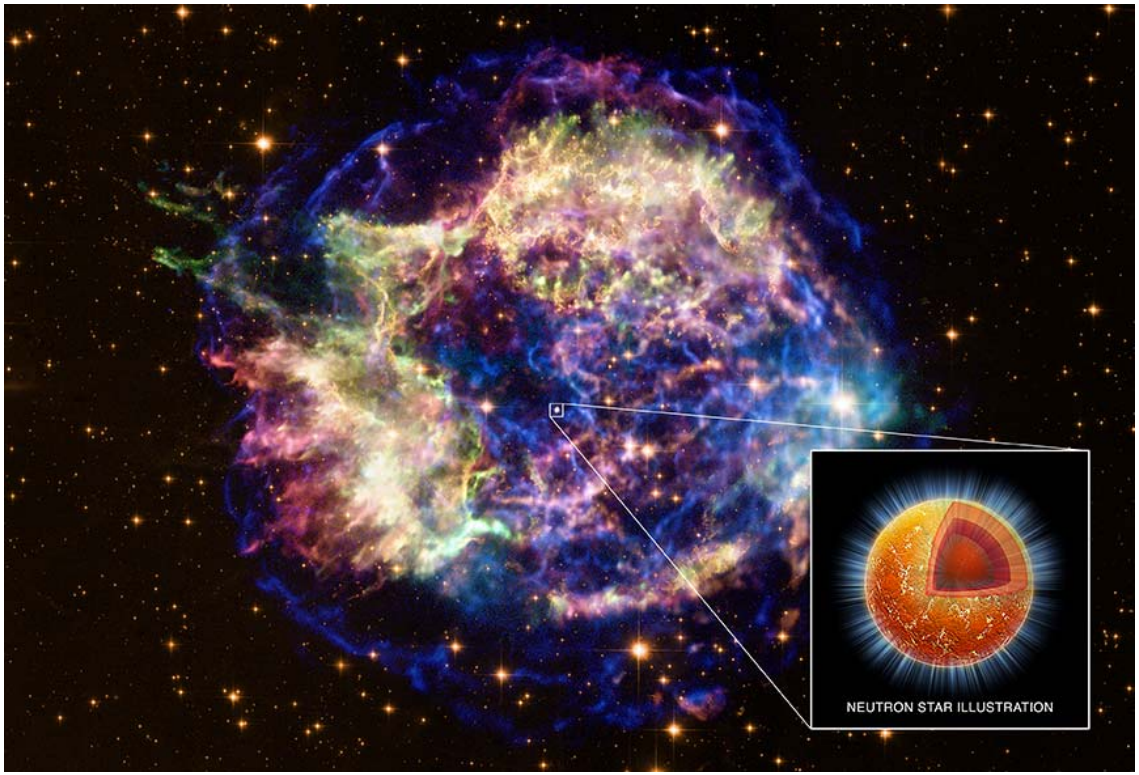
Chandra Science Highlight

Cassiopeia A Neutron Star: Evidence for a Superfluid Core



Chandra X-ray Observatory ACIS image Scale: Image is 8.91 arcmin across (about 26 light years)
Distance Estimate: 10,000 light years.

- Chandra observations of the neutron star in the Cassiopeia A supernova remnant over the past ten years have revealed a 4% decline in the neutron star's surface temperature, which is ~2 MK.
- The delayed, rapid cooling of the neutron star, which is ~330 years old, is likely caused by the formation of a neutron star superfluid in the central regions of the star, where the temperature I ~700 MK.
- The rapid temperature decline is expected to continue for a few decades.

References:
P.S. Shternin et al, arXiv:1012.0045 (2010).
D. Page et al. arXiv:1011.6142v1 (2011)

Credit: X-ray NASA/CXC/UNAM/Ioffe/D.Page, P.Shternin et al; Optical: NASA/STScI; Illustration: NASA/CMX/M. Weiss

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