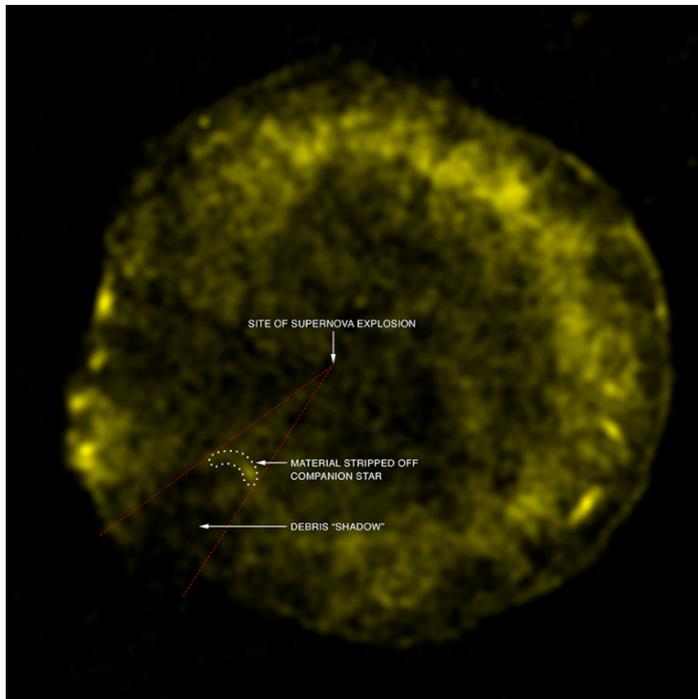
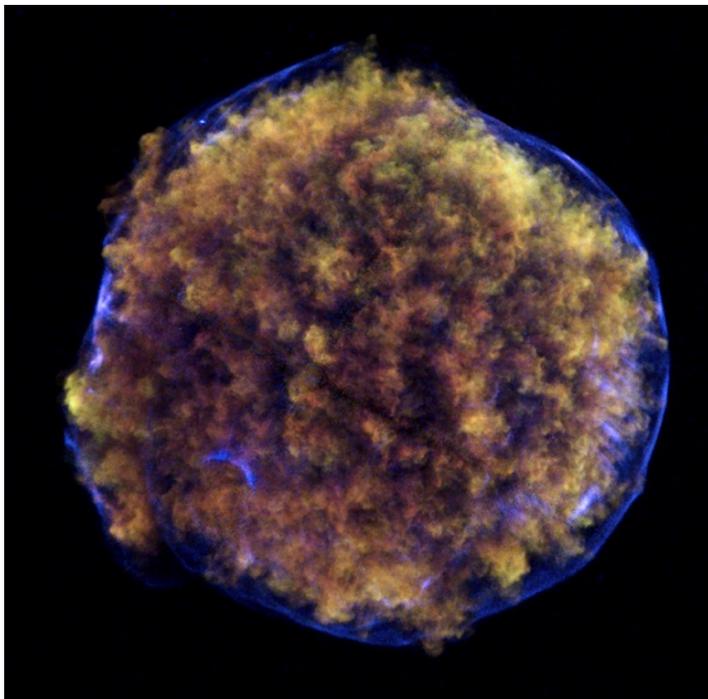




Chandra Science Highlight

Tycho's Supernova Remnant: New Evidence on Origin of Supernovas



In the image on the left, low and medium energy X-rays in red and green show expanding debris from the supernova explosion. High energy X-rays in blue reveal the blast wave produced by extremely energetic electrons. Also shown in the lower left region of is a blue arc of X-ray emission. The image on the right shows the supernova remnant as it appears in X-ray line emission from iron ions. The white dotted line shows an X-ray arc, and the red-dotted line shows the cone of debris and the shadow created by debris.

Credit: NASA/CXC/Chinese Academy of Sciences/ F. Lu et al; Distance Estimate: 10,000 light years;
Scale: Image is 10 arc minutes across; Chandra ACIS image

- Optical data have revealed a star within the remnant that is moving much more quickly than its neighbors, hinting that it could be the companion to the supernova that was given a kick by the explosion.
- Several observations (the opening angle of the cone that produced the arc, the spectrum of the arc, and its relation to the motion of the putative companion star) suggest that a shock wave created the arc when a white dwarf exploded and blew material off the surface of a nearby companion star.
- These pieces of evidence support a scenario in which the supernova was caused when a white dwarf pulled too much material from a “normal,” or Sun-like, companion star, making the white dwarf to become unstable and explode.