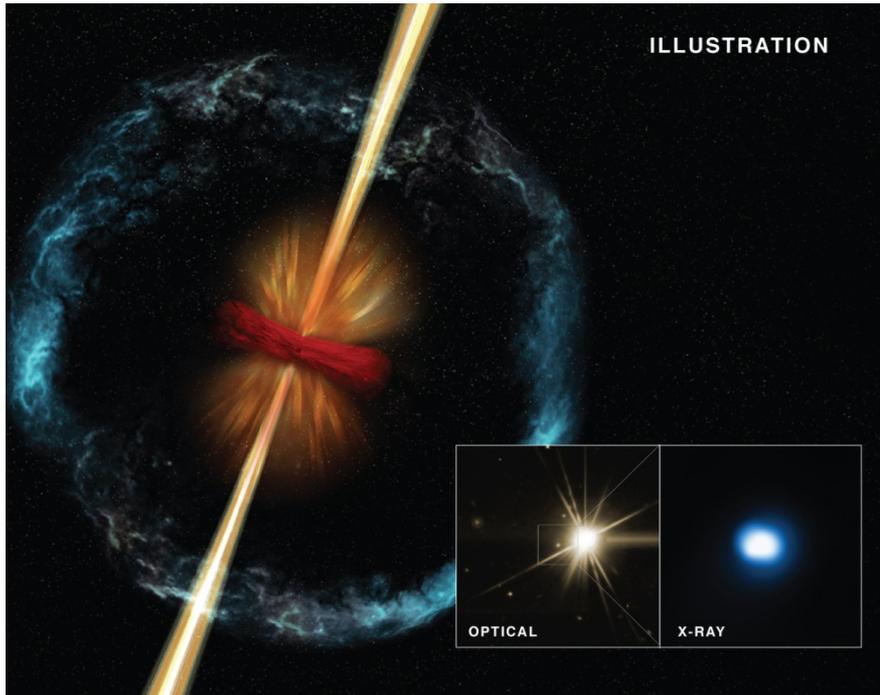




Chandra Science Highlight

GRB 140903A: Chandra Finds Evidence for Violent Stellar Merger



The illustration shows a jet of high energy particles caused by the merger of a neutron star with either another neutron star or black hole. Such jets are thought to produce short gamma ray bursts (GRBs). The insets show the X-ray (right) and optical (small dot to the left of the bright foreground star) images detected from GRB 14903A.

- ❑ The GRB lasted less than 2 seconds, but the X-ray afterglow was detected by Chandra at 3 days and 21 days after the GRB.
- ❑ Combined X-ray, optical, and radio observations of the afterglow suggest emission from a shock wave produced by a narrow (~ 5 degrees) jet moving near the speed of light.
- ❑ The prompt GRB, the lack of a bright supernova, and the low star-formation rate of the host galaxy all point to a compact binary merger as the source of the GRB.

Scale:

X-ray image is 15 arcsec across
(about 244,00 light years)

Distance Estimate:

About 3.9 billion light years
(redshift $z = 0.351$)

Credit: X-ray: NASA/CXC/Univ. of Maryland/E. Troja et al.;
Optical: Lowell Observatory's Discovery Channel Telescope/E.
Troja et al. Illustration: NASA/CXC/M. Weiss

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