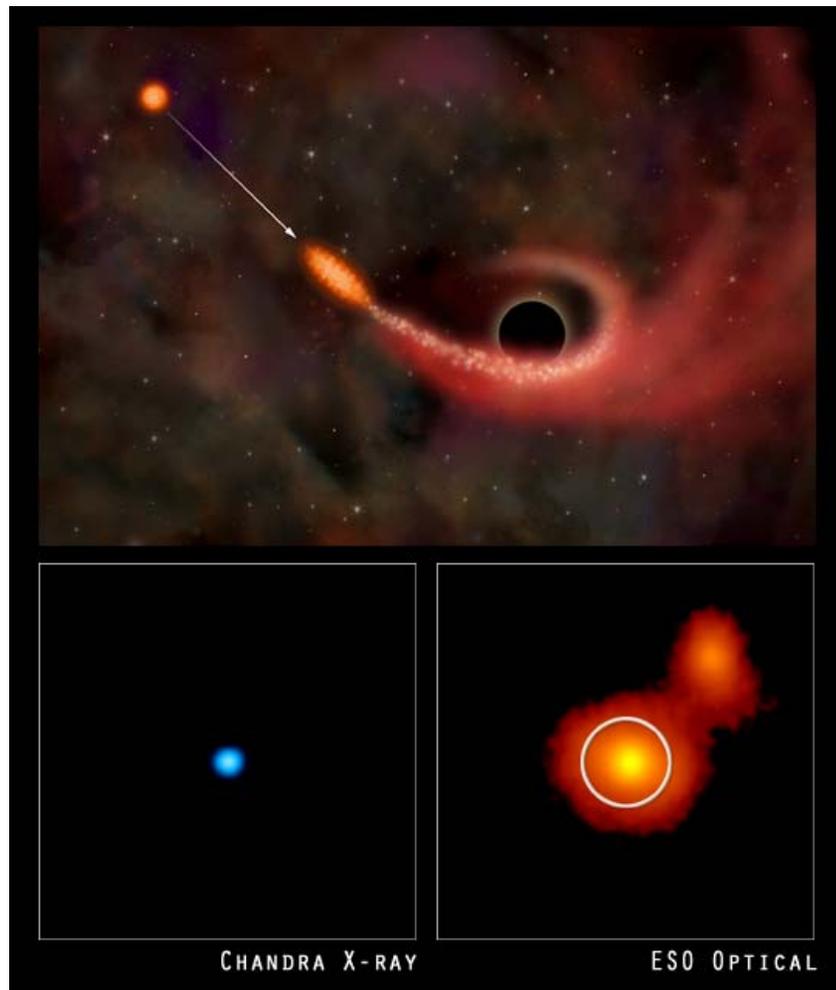




Chandra Science Highlight

X-ray Evidence for Tidal Disruption of a Star by a Supermassive Black Hole



Observations of the galaxy RXJ1241-119A with Chandra (lower left image) and other X-ray observatories confirmed that a powerful X-ray outburst had occurred in the center of RXJ1242-11, which appears normal in a Hubble Space Telescope image (lower right, with the white circle defining the location of the Chandra image). This X-ray outburst, one of the most powerful ever detected in a galaxy, is evidence for the catastrophic destruction of a star that wandered too close to a supermassive black hole.

- Combined observations from the Roentgensatellite (ROSAT), Chandra and XMM-Newton X-ray observatories indicate that an enormously powerful X-ray outburst, or flare, occurred in the otherwise quiet center of the galaxy RXJ1242.
- The amount of energy liberated and duration of the event, 10^{51} ergs over a few years, strongly suggest that the outburst was caused by matter falling into a supermassive black hole from a doomed giant star.
- The absence of any unusual optical flaring shows that the outburst was caused by a localized event, and was not due to variability in a large accretion disk around the black hole.

Chandra X-ray Observatory ACIS image.

Reference: S. Komossa et al. 2004, March 1 *Astrophys. J. Letters*