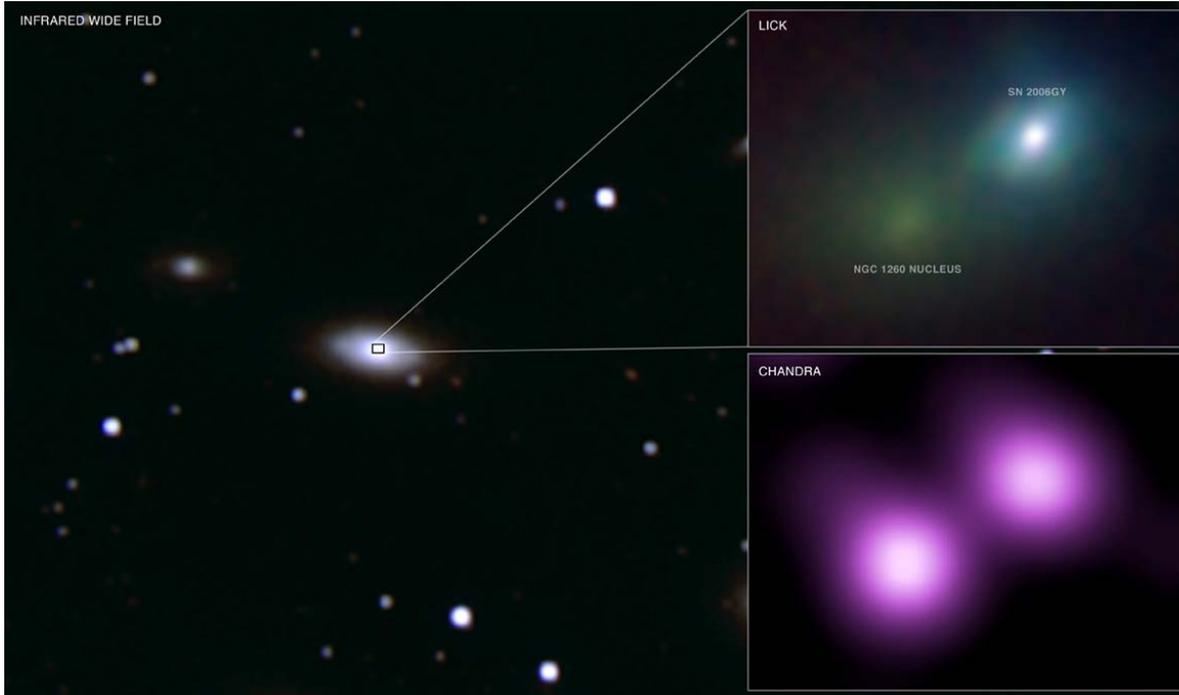




Chandra Science Highlight

SN 2006GY: The Most Luminous Supernova Ever Recorded

Chandra X-ray Observatory ACIS image.



The wide-field image on the left shows the host galaxy NGC 1260 with an inset box to locate the position of SN 2006gy in the galaxy. The panels on the right show the infrared and X-ray images. In these images the source to the lower left is the center of NGC 1260, and the source to the upper right is SN 2006gy.

Credit: X-ray: NASA/CXC/UC Berkeley/
N.Smith et al.; IR Wide Field: PAIRITEL/
UC Berkeley/J. Bloom; IR Closeup:
Lick/UC Berkeley/J. Bloom & C. Hansen

Reference: N. Smith et al. 2007, ApJ, accepted
(astro-ph/0612617v2)

- The supernova was the most luminous ever recorded, reaching a peak luminosity equal to that of 50 billion suns – ten times brighter than its host galaxy.
- The peak luminosity, the very gradual rise (70 days) and decay of the brightness, and the total energy radiated put SN 2006gy in a class by itself.
- The Chandra data, taken 57 days after the discovery of SN 2006gy, revealed that SN 2006gy was a relatively weak X-ray emitter.
- The weak X-ray emission rules out a collision with a dense circumstellar cloud as the primary source of the optical luminosity and favors an extremely massive progenitor star.
- SN 2006gy may be the first observed example of a pair-instability supernova, in which the production of electron-positron pairs in the interior of a very massive star (about 200 solar masses) precipitates a thermonuclear explosion that disrupts the star completely and produces a large amount (twenty solar masses) of radioactive nickel.