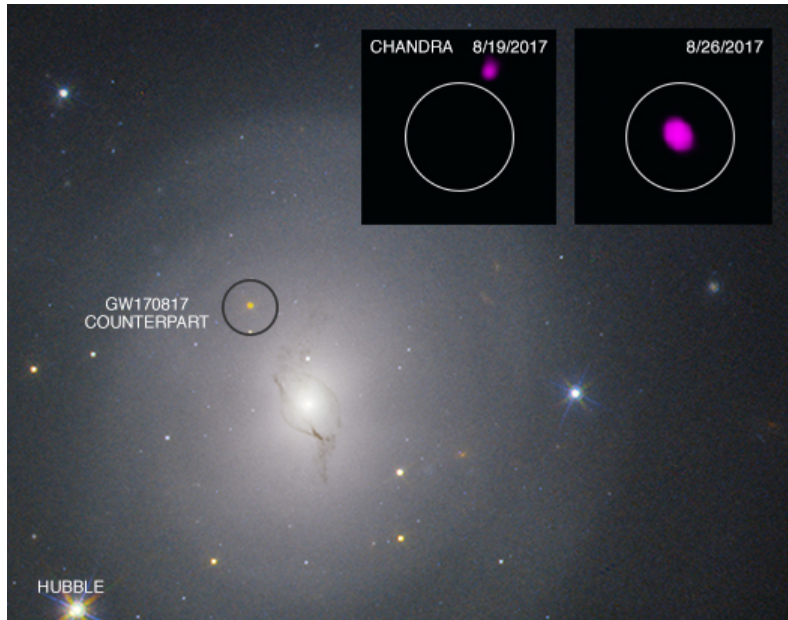




Chandra Science Highlight

GW170817: Chandra makes first X-ray detection of gravitational wave event



Main panel: Hubble Space Telescope image of the galaxy NGC 4993, taken on August 22, 2017. The optical counterpart of the gravitational wave source GW170817 is in the circle on the upper left. The inset boxes on the upper right show the Chandra non-detection of GW170817 on August 19, 2017, and the subsequent detection on August 26, 2017.

Distance estimate: 130 million light years

**CXC Operated for NASA by the
Smithsonian Astrophysical Observatory**

- The Chandra observation of GW170817 was the first X-ray detection of a gravitational wave event.
- GW170817 was first detected by the advanced Laser Interferometer Gravitational Wave Observatory on August 17, 2017.
- A short gamma-ray burst source was detected two seconds later by NASA's Fermi Gamma-ray Burst Monitor and by a number of optical telescopes later in the day.
- GW170817 was not detected by Chandra in an observation made two days after the event, but was subsequently detected on August 26 and again on September 1-2.
- The data indicate that GW170817 represents the merger of two neutron stars that produced a jet of high-energy particles pointing about 20-60 degrees away from the line of sight.

Image scale: Full field optical is about 0.9 arcmin across (about 367,000 light years); X-ray inset is about 0.1 arcmin across (about 41,000 light years)

Credit: X-ray: NASA/CXC/Northwestern U./W. Fong & R. Margutti et al. & NASA/GSFC/E. Troja et al.; Optical: NASA/STScI Instrument: ACIS

References: Margutti, R. et al. 2017 *Astrophys. J. Lett.* 848, L20; Haggard, D. et al. 2017 *Astrophys. J. Lett.* 848 L25, Troja, E. 2017 *Nature* 551, 71



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