A Global Astronomy Event

The seconds, hours and days following detection of GW170817

In the seconds, hours and days after LIGO and Virgo detected gravitational waves from a neutron star collision on 17 August, some 70 gamma-ray, X-ray, optical and radio telescopes detected signals from the same event—kicking off the era of multi-messenger astronomy. Find out more at www.osa-opn.org/ligo.

Hanford, Wash., USA

Livingston, La., USA

Pisa, Italy

NASA Fermi

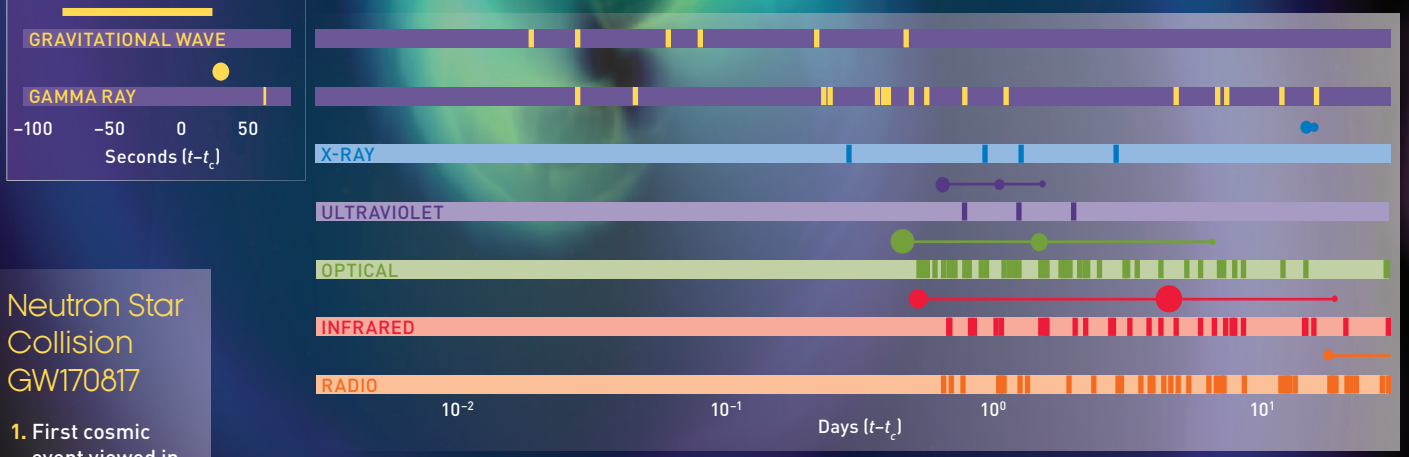
ESA INTEGRAL

17 AUGUST 12:41:04 UTC

The LIGO-Virgo gravitational-wave detector network registers a signal from the inspiral of two compact stellar remnants known as neutron stars.

+1.7 seconds

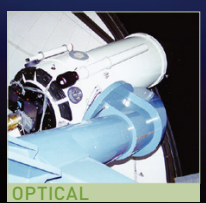
Less than two seconds later, two space-based telescopes, NASA's Fermi and ESA's INTEGRAL, detect a burst of gamma rays.



Adapted from Abbot et al., Astrophys. J. Lett. **848**, L12 (2017). Vertical lines note times after first LIGO observation that other observations were reported in a GCN circular; circles show the times of representative observations.

Neutron Star Collision GW170817

1. First cosmic event viewed in both gravitational waves and light
2. Confirms that short gamma-ray bursts come from neutron star collisions
3. Kilanova afterglow confirms source for heavy elements in the universe



OPTICAL

+10 hrs 52 min

Swope telescope in Chile detects a new bright optical transient source in the Hydra constellation

INFRARED

+11 hrs 36 min

Gemini telescope on Mauna Kea, Hawaii, USA, first observes infrared emission

ULTRAVIOLET

+15 hours

Dark Energy Camera on the Blanco telescope in Chile detects a bright ultraviolet emission

X-RAY

+9 days

Chandra space telescope makes the first X-ray detection of a gravitational-wave source

RADIO

+16 days

Very Large Array in New Mexico, USA, detects radio emission

Sources: www.ligo.org, www.ligo.caltech.edu, www.esa.int
Background wave image: Karan Jani/Georgia Tech, Infographic: Alessia Kirkland