

# NEW SOURCE OF GRAVITATIONAL WAVES DETECTED

Relevant for: Science & Technology | Topic: Science and Technology- developments and their applications and effects in everyday life

Scientists have for the first time detected gravitational waves – ripples in the fabric of space-time – produced by the collision of a neutron star and a black hole. This finding confirms that there are neutron star-black hole systems and will help answer many questions about the cosmos, from star formation to the expansion rate of our universe.

Gravitational waves are produced when celestial objects collide and the ensuing energy creates ripples in the fabric of space-time which carry all the way to detectors on Earth.

The reverberations from the two celestial objects were picked up using a global network of gravitational wave detectors, the most sensitive scientific instruments ever built, according to the researchers from UK's Strathclyde University. The university is part of the international network of scientists, the LIGO Scientific Collaboration. On January 5 this year, the Advanced LIGO detector in Louisiana, US and the Advanced Virgo detector in Italy, picked up the final throes of the death spiral between a neutron star – the collapsed core of a massive supergiant star – and a black hole as they circled ever closer and merged together.

Just days later, a second signal was picked up by both detectors coming from the final orbits and smashing together of another neutron star and black hole pair.

This is the first time scientists have seen gravitational waves from a neutron star and a black hole. Previous gravitational wave detections have spotted black holes colliding, and neutron stars merging but not one of each, the researchers said.

“These detections confirm that there are populations of binary systems consisting of a neutron star and a black hole,” said Professor Stuart Reid from the Department of Biomedical Engineering at Strathclyde.

“Such astrophysical systems can help answer many big questions about the universe, from star formation and stellar evolution, to the expansion fate of our Universe,” Reid said in a statement.

Since the first ever direct detection of gravitational waves in 2015, astronomers have predicted that this type of system – a black hole and neutron star merger – could exist, but without any compelling observational evidence.

Now that scientists have finally witnessed the existence of this new type of system, they said their detection will bring important new clues about how black holes and neutron stars form.

In future the team hopes to detect many more neutron star-black hole collisions, including cases where the black hole tearing apart the neutron star is observed in both gravitational waves and light.

These observations will help scientists to find out more about what neutron stars are made of.

## [Our code of editorial values](#)

Depending on how well humans get a handle on carbon emissions and rising temperatures, a

child born today could be confronted with multiple climate-related health threats before turning 30, the report shows.

**END**

Downloaded from **crackIAS.com**

© **Zuccess App** by crackIAS.com

CrackIAS.com