Astronomers Detect Repeating Fast Radio Burst [1]

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El radio telescopio de Arecibo, de 305-m y su plataforma suspendida. Desde el espacio, una secuencia de ondas que parpadean, van hacia el reflector, donde serán reflejados y detectados

por los recibidores. Crédito de la figura : Danielle Futselaar

Fast radio bursts [3] (FRBs) are mysterious and rarely detected bursts of energy from space. They have durations of milliseconds and exhibit the characteristic dispersion sweep of radio pulsars.

These events emit as much energy in one millisecond as the Sun emits in 10,000 years, but the physical phenomenon that causes them is unknown.

Only 17 FRBs have ever been recorded, and they were all one-off events. Because of that, most hypotheses about the origin of FRBs have involved cataclysmic incidents that destroy their source – a star exploding in a supernova, for example, or a neutron star collapsing into a black hole.

The new finding, however, shows that at least some FRBs have other origins.

In 2015, McGill University astronomer Paul Scholz and co-authors detected several bursts of radio waves using the Arecibo radio telescope in Puerto Rico.

The properties of these bursts, according to the team, were consistent with those of an FRB detected in 2012.

“The repeat signals were surprising and very exciting. I knew immediately that the discovery would be extremely important in the study of FRBs,” said Scholz, who is a co-author of a paper in the journal *Nature* [4].

The astronomers found that there were a total of 10 new bursts. “The finding suggests that these bursts must have come from a very exotic object, such as a rotating neutron star having unprecedented power that enables the emission of extremely bright pulses,” they said.

“It is also possible that the finding represents the first discovery of a sub-class of the cosmic fast-radio-burst population.”

“Not only did these bursts repeat, but their brightness and spectra also differ from those of other FRBs,” said lead author Dr. Laura Spitler of the Max Planck Institute for Radio Astronomy in Bonn, Germany.

Intriguingly, the most likely implication of the new finding – that the repeating FRB originates from a very young extragalactic neutron star – is at odds with the results of a study published last week in *Nature* [5].

That paper suggested FRBs are related to cataclysmic events, such as short gamma-ray bursts, which can’t generate repeat events.

“However, the apparent conflict between the studies could be resolved, if it turns out that there are at least two kinds of FRB sources,” said co-author Prof. Victoria Kaspi, also of McGill University.

For more information on the research please refer to the scientific article published in Nature during the month of January 2016.

Spitler, L.G. et al. A repeating fast radio burst. Nature (2016)

http://www.nature.com/nature/journal/vaop/ncurrent/full/nature17168.html [6]

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