Gravitational Waves

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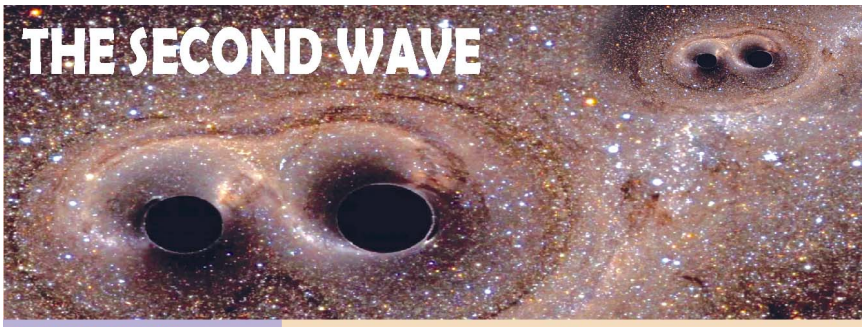
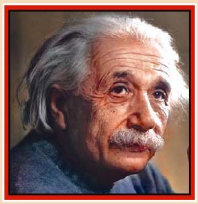


EINSTEIN'S THEORY

Einstein predicted the existence of the waves in his theory of relativity a century ago, and scientists have been able to detect them with an instrument known as the Laser Interferometer Gravitational-Wave Observatory, or LIGO



GRAVITATIONAL WAVES

Black holes form in the final stage of most massive stars' evolution. The space bodies are so dense that neither light nor matter can escape them.

Sometimes the holes couple, orbiting in a 'dance' around each other as they lose energy in the form of gravitational waves, ultimately merging into a single black hole

Those gravitational waves allow scientists to detect when the black holes merge

THE FIRST DETECTION

The first detection of waves– in September 2015 –was announced in February 2016, in a landmark discovery for physics and astronomy after decades of efforts

THE NEW WAVE

Researchers announced they had found the waves a second time in December 2015, produced by the collision of two black holes some 1.4 billion years ago.

SIZE OF BLACKHOLE

It is very significant that these black holes were much less massive than those in the first detection. It is a promising start to mapping the populations of black holes in our universe.

WHAT IS LIGO? The Laser Interferometer Gravitational-Wave Observatory (LIGO) consists of two identical detectors 3,000 km apart – one in Livingston, Louisiana and the other in Hanford, Washington