

Present and Future of LIGO

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Albert Einstein predicted the existence of gravitational waves in 1916 as part of his theory of general relativity. Gravitational waves are "ripples" in spacetime. In Einstein's theory, space and time are continuously distorted by the presence of mass, just like a stretched piece of fabric is distorted by a heavy object placed on it. When large masses move rapidly, the spacetime becomes stirred by their motion; "ripples" start traveling outward with the speed of light. Coalescing or spinning neutron stars, star explosions and black holes are strong sources of gravitational waves that are likely to be observed by the Laser Interferometer Gravitational-wave Observatory.

Researchers of the Physics and Astronomy Department have recently joined the NSF-sponsored LIGO Scientific Collaboration. Together with more than 500 scientists from 47 institutions worldwide, they hope to soon achieve the first-ever detection of a gravitational wave.