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Probing Einstein's Universe with Gravitational Waves

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As a consequence of his theory of general relativity, Einstein predicted the existence of a new physical phenomenon called gravitational radiation. In this theory, concentrations of mass (or energy) warp space-time, and changes in the shape of such objects cause distortions called gravitational waves that propagate through the Universe at the speed of light. Almost 100 years later, these waves so fundamental to Einstein's theory are yet to be directly observed. The Laser Interferometer Gravitational-Wave Observatory (LIGO) is an ambitious attempt to detect such waves from some of the most spectacular phenomena in the universe: colliding black holes, supernovae and even relic waves from the big bang. The science of gravitational waves and the prospects for detection will be discussed.