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Opening a New Window to the Universe with Gravitational Waves

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Gravitational waves are "ripples in space time" produced by violent astrophysical events such as core-collapse supernova and collisions of neutron stars and black holes, as well as by other continuous phenomena as rotating stars and the early Universe. These waves have never been directly detected on Earth yet, but a network of LIGO and Virgo ground-based interferometric detectors is expected to do this very soon. These detectors have operated with record sensitivity in the recent past, and they are being upgraded to begin operating with good prospects of observations, to start operations in a few years. I will present a brief introduction to the nature and detection of gravitational waves, and present the current status of the international network of detectors, which will include new detectors in India and Japan.