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Gravitational Wave Astrophysics using LIGO

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The field of gravitational-wave searches has entered a very exciting time. The LIGO gravitational-wave detectors have achieved unprecedented sensitivities and have recently completed a two-year long observation run. The data acquired during this run are being analyzed and are beginning to yield astrophysical implications. This includes searches for transient sources of gravitational-waves such as GRBs, searches for periodic sources such as pulsars, and searches for stochastic background of gravitational-waves which could be of cosmological or astrophysical origin. Moreover, the next generation ground-based gravitational-wave detectors are already being built. In this talk, I will describe the present status of the LIGO detectors, some of the most recent results obtained using LIGO data, and prospects for the next-generation gravitational-wave detectors.