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LIGO and the Era of Gravitational Wave Astronomy

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Following a major upgrade, the two advanced detectors of the Laser Interferometer Gravitational-wave Observatory (LIGO) held their first observation run (O1) between September 2015 and January 2016. On September 14th, 2015 the Advanced LIGO detectors observed the transient gravitational-wave signal GW150914, determined to be the coalescence of two black holes, launching the era of gravitational-wave astronomy. Another confirmed observation in O1 contributes to our observational evidence for black holes in LIGO data and has important astrophysical implications. The second Advanced LIGO observation run (O2) began on November 30, 2016 and is currently in progress. As we enter the era of observational gravitational wave astronomy we can look forward to improved detector sensitivity, access to new frequency regimes with other gravitational wave experiments, and multi-messenger detections in collaboration with our electromagnetic astronomy partners.