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**Parameter estimation and tests of General Relativity with GW transients in Advanced LIGO**

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The Advanced LIGO observatories have successfully completed their first observation run. Data were collected from September 2015 to January 2016, with a sensitivity a few times better than initial instruments in the hundreds of Hertz band. Bayesian parameter estimation and model selection algorithms can be used to estimate the astrophysical parameters of gravitational-wave sources, as well as to perform tests of General Relativity in its strong-field dynamical regime. In this talk we will describe the methods devised to characterize transient gravitational wave sources and their applications in the advanced gravitational-wave detector era.