

Abstract Submitted
for the SES15 Meeting of
The American Physical Society

The Advanced LIGO Detector and Seismic Noise CHRISTOPHER BUCHANAN, Louisiana State University, LIGO SCIENTIFIC COLLABORATION COLLABORATION — The Advanced LIGO project has recently started its first observation run with newly upgraded ultra-high sensitivity gravitational wave detectors (one in Louisiana, and another in Washington). The basic design of these detectors is a Michelson-Morley interferometer, with Fabry-Perot cavities in each arm. We also rely on sophisticated instrumentation and subsystems, such as high-isolation multi-stage suspensions and additional optical cavities, in order to operate at a sensitivity necessary to detect gravitational waves. These very small fluctuations in space-time are produced by astrophysical sources (e.g. the inspiral of two neutron stars), and these detectors are likely to provide the first direct detection of gravitational waves in the next few years. My work focuses on characterizing sensitivity-limiting noise in low frequencies, where seismic effects (earthquakes, tides, local traffic, etc.) dominate. A good understanding of the spectral and time characteristics of this noise helps us to optimize data analysis methods in this regime and to improve and maintain an optimum state of the detector.

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Date submitted: 19 Oct 2015

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