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Update on Suspension Design for Advanced LIGO NORNA ROBERTSON, LIGO - Caltech — The Advanced LIGO project aims at a tenfold improvement in sensitivity over the performance of the initial LIGO gravitational-wave detector while at the same time reducing the low-frequency cutoff from ∼40 Hz to ∼10 Hz. Achieving such an improvement is technically challenging, requiring a noise level at 10 Hz of $\sim 10^{-19}$ m/$\sqrt{}$ Hz at each test mass of the interferometer. Two fundamental noise sources which contribute at low frequencies are seismic noise and thermal noise associated with the suspension of the masses. In this talk we discuss our work on developing a quadruple pendulum suspension system incorporating a monolithic silica suspension for Advanced LIGO, and we present results from a prototype suspension and from associated experiments aimed at testing some of the aspects of the design.

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