

Low Noise Cavities in Interferometric Gravitational Wave Detectors

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The first upgraded detectors in the global network of interferometric gravitational wave antennae will start taking data in the next few months, initiating a new program of searches for gravitational waves from astrophysical sources via sensing the effects of the waves on the relative displacements of suspended mirrors. These detectors represent the most sensitive displacement measuring devices ever constructed, with core parts of the instruments being formed from optical cavities incorporating mirrors and mirror coatings of ultra-low thermal noise. Improving detector sensitivities further will require further improvements to the thermal noise performance of the cavities, making this a highly active research area in the field. This talk will discuss briefly the status of the current instruments, the performance of the optical cavities used, and cover some of the avenues of research being explored in aiming for even better thermal-noise-limited sensitivities.