

Coating thermal noise direct measurement at cryogenic temperature

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Currently, the design sensitivity of the second generation Gravitational-Wave (GW) detectors is limited in the low and mid frequency range by Thermal Noise (TN) and Seismic Noise (SN).

Major improvements in GW instrumentation science are expected from the Thermal Noise (TN) reduction in the mid-frequency range of the detectors, achievable also by cooling down the mirrors to 10K.

In order to select the coating material that are intended to be used in the third generation of detectors, the TN of new coatings should be directly measured using an interferometric method in a cryogenic environment. A setup enabling this kind of characterization is under development.

In this talk we will present the design and the status of the isolation system identified to reduce the ground vibration that can affect the measurements.

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