



Contribution ID: 8

Type: **not specified**

Dissipation in a Tantala film from 10K to 150K from thermal noise measurements

Thursday, 24 October 2019 15:30 (25 minutes)

We study the dissipation φ of a silicon μ -cantilever coated with 300nm of Tantala. From the thermal noise spectra, a fit of 10 resonances for flexion modes, and 6 resonances for torsion modes can be performed, giving access to φ from 2 kHz to 600 kHz. Dissipation presents a weak maximum around 50 K in temperature, and is a slowly increasing function of frequency (power law f with $\alpha \sim 0.06$). An extrapolation of this behaviour to lower frequencies (down to 10 Hz) agrees reasonably well with the thermal noise measurements, even if external noise peaks hinder direct exploitation of noise in this frequency range.

Primary authors: PEDURAND, Richard (Univ. Lyon, IN2P3/CNRS, Laboratoire des Matériaux Avancés (LMA) & Univ. Lyon, ENS Lyon, UCBL, CNRS, Laboratoire de Physique (LPENSL)); HANSALI, Ghaouti (LMA); DOLIQUE, Vincent (LMA, LPENSL); FONTANA, Alex (LPENSL); MERENI, Lorenzo (LMA); HOFMAN, David (LMA); SASSO-LAS, Benoit (LMA); MICHEL, Christophe (LMA); PINARD, Laurent (LMA); TEILLON, Julien (LMA); GRANATA, Massimo (LMA); DEGALLAIX, Jérôme (LMA); CAGNOLI, Gianpietro (LMA & ILM-UCBL); BELLON, Ludovic (Univ Lyon, ENS Lyon, UCBL, CNRS, Laboratoire de Physique (LPENSL))

Presenter: BELLON, Ludovic (Univ Lyon, ENS Lyon, UCBL, CNRS, Laboratoire de Physique (LPENSL))

Session Classification: Ultra-low-noise optical coatings