

Abstract Submitted  
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**Thermomechanical Noise Measurements of Very High Frequency (VHF) Nanomechanical Resonators**<sup>1</sup> CARL HART IV, KAMIL EKINCI, Aerospace and Mechanical Engineering, Boston University, Boston, MA — We have designed and built a near infrared (NIR) optical interferometer for ultra-sensitive displacement measurements on nanomechanical resonators. At moderate optical power levels, we are able to resolve the thermomechanical displacement fluctuations of stiff doubly-clamped beams with fundamental mode frequencies in the 100 MHz range. In a first set of noise measurements, we have determined the quality factors and resonant frequencies of the nanomechanical resonators under ambient atmospheric pressure at room temperature. We will compare these values to those extracted from driven resonance measurements and discuss sources of disagreement. Furthermore, we will discuss extraction of the local temperature of the nanomechanical resonators in order to assess the heating due to the optical probe.

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Kamil Ekinici  
Aerospace and Mechanical Engineering, Boston University, Boston, MA

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