

Abstract Submitted
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Measurement of the Casimir force between gold surfaces using a Frequency-Modulation technique JOE GARRETT¹, JEREMY MUNDAY²,
University of Maryland — The Casimir force arises from the interactions between fluctuating dipoles in two media separated by a gap. We measure the derivative of the Casimir force with respect to sample separation between a gold-coated sphere and a gold-coated planar substrate using a non-contact Frequency-Modulation (FM) method of Atomic Force Microscopy (AFM) in a thermally controlled environment. The resonant frequency of the cantilever is tracked as the sphere is brought close to the surface. At each distance from the surface, the bias voltage of the sphere is swept, both to measure the distance between the sphere and the plate and to mitigate the effect of any contact potential difference. We will present recently obtained experimental data and discuss the various artifacts associated with Casimir force measurements.

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