Abstract Submitted
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Measurement of the long range van der Waals force in graphene[1]
JUN XU, University of California, Riverside, ALEXANDR BANISHEV, University of Illinois at Urbana-Champaign, UMAR MOHIDEEN, University of California, Riverside — The gradient of the long range van der Waals force between a Si-SiO2 -graphene substrate and an Au-coated sphere is measured by means of a dynamic atomic force microscope operated in the frequency shift technique. It is shown that the presence of graphene leads to up to a 9% increase in the force gradient at the shortest separation considered. The experimental results are compared to a theory of the long range thermal van der Waals interaction for multilayered test bodies coated with a graphene sheet and found to be in good agreement. References: .[1] A.A. Banishev, H. Wen, J. Xu, R.K. Kawakami, G.L. Klimchitskaya, V.M. Mostepanenko, U. Mohideen, Measuring the Casimir force gradient from graphene on a SiO2 substrate, Phys. Rev. B, 87 (2013) 5. [2] G.L. Klimchitskaya, U. Mohideen, V.M. Mostepanenko, Theory of the Casimir interaction from graphene-coated substrates using the polarization tensor and comparison with experiment, Phys. Rev. B, 89 (2014) 8.

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