

# How to observe the giant thermal effect in the Casimir force for graphene systems

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## Abstract

© 2017 American Physical Society. A differential measurement scheme is proposed which allows for clear observation of the giant thermal effect for the Casimir force, which was recently predicted to occur in graphene systems at short separation distances. The difference among the Casimir forces acting between a metal-coated sphere and the two halves of a dielectric plate, one uncoated and the other coated with graphene, is calculated in the framework of the Dirac model using the rigorous formalism of the polarization tensor. It is shown that in the proposed configuration both the difference among the Casimir forces and its thermal contribution can be easily measured using existing experimental setups. An observation of the giant thermal effect should open opportunities for modulation and control of dispersion forces in micromechanical systems based on graphene and other novel two-dimensional (2D) materials.

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