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Measuring the conductivity dependence of the Casimir force¹ JUN XU, ROBERT SCHAFER, ALEXANDR BANISHEV, UMAR MOHIDEEN, University of California, Riverside, CA 92521 — The strength and distance dependence of the Casimir force can be controlled through the conductivity of the material bodies, with lower conductivity in general leading to lower Casimir forces. However low conductivity, large bandgap materials which are insulating, have drawbacks as any surface electrostatic charges cannot be easily compensated. This restricts experiments to metallic or highly doped semiconductor materials. We will report on measurements of the Casimir force gradient using the frequency shift technique. Improvements in the measurement technique will be discussed. Measurements of the Casimir force gradient using low and high conductivity silicon surfaces will be reported.

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