

Abstract Submitted  
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**Measurements of the Casimir force in fluids** JEREMY MUNDAY,  
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CAPASSO, Division of Engineering and Applied Sciences, Harvard University, Cam-  
bridge MA 02138 — Confinement of the quantum fluctuations of electromagnetic  
fields between two grounded, conducting surfaces gives rise to an attractive force  
first predicted by H. B. G. Casimir. During the past decade, there have been many  
experimental demonstrations of this force between two metal surfaces in vacuum.  
While high precision experiments have been performed for this case, few experiments  
have been done between metallized or dielectric objects in fluids. For this situation,  
a more general formalism was developed by Lifshitz. If materials are chosen with  
suitable dielectric response functions, repulsive quantum electrodynamical (QED)  
forces can also arise. We will discuss experimental results using an atomic force mi-  
croscope (AFM) to measure the interaction force between a metallized sphere and  
a plate, made of either metal or dielectric, in fluid.

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