

Towards Casimir Force Measurements with Optical Tweezers

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We present an experimental proposal to measure the Casimir interaction between microspheres inside a liquid medium for geometric aspect ratios far beyond the validity of the proximity force approximation. To demonstrate the feasibility of our proposal, we have measured double layer forces in the range ~ 10 fN by employing ultra-soft optical tweezers. The experimental results should provide valuable information on the role of screening in the Casimir effect.