

Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Scattering Theory Calculations of Casimir Energies at High Curvature¹ NOAH GRAHAM, Middlebury College, THORSTEN EMIG, Université Paris Sud, ADEN FORROW, Middlebury College, ROBERT JAFFE, MEHRAN KARDAR, MOHAMMAD MAGHREBI, Massachusetts Institute of Technology, JAMAL RAHI, Rockefeller University, ALEX SHPUNT, PrimeSense Inc. — Scattering theory provides a powerful tool for capturing the response of an object to electromagnetic charge and field fluctuations. Techniques based on scattering theory have made possible a wide range of new calculations of Casimir energies. In this approach, the Casimir interaction energy for a collection of objects can be expressed in terms of the scattering T-matrices for each object individually, combined with universal translation matrices describing the objects' relative positions and orientations. These translation matrices are derived from an expansion of the free Green's function in an appropriate coordinate system, independent of the details of the objects themselves. This method proves particularly valuable for geometries involving high curvature, such as edges and tips. I will describe this approach in general terms and then give results from several problems to which it has been applied successfully. I will also discuss new developments in scattering theory that have been motivated by these problems.

¹Supported by the National Science Foundation, the US Department of Energy, the Defense Advanced Research Projects Agency, and the Deutsche Forschungsgemeinschaft

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Date submitted: 08 Mar 2013

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