

Abstract Submitted
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**Electromagnetic fluctuations in
non-equilibrium: Casimir forces and heat transfer** MATTHIAS

KRUGER, MIT, Department of Physics, 77 Massachusetts Ave, Cambridge, MA 02139, THORSTEN EMIG, Laboratoire de Physique Theorique et Modeles Statistiques, CNRS UMR 8626, Universite Paris-Sud, 91405 Orsay cedex, France, GIUSEPPE BIMONTE, Dipartimento di Scienze Fisiche, Universita di Napoli Federico II, Complesso Universitario MSA, Via Cintia, I-80126 Napoli, Italy and INFN Sezione, VLADYSLAV GOLYK, ALEXANDER MCCAULEY, MEHRAN KARDAR, MIT, Department of Physics, 77 Massachusetts Ave, Cambridge, MA 02139 — It is well known that quantum Casimir forces play an important role in micro- or nanostructures. Recently, the role of temperature in thermal non-equilibrium raised theoretical as well as experimental interest. If the objects are held at different temperatures, the interactions depend on all temperatures in the system, and show many effects which are absent in equilibrium. Additionally, the objects exchange thermal energy by electromagnetic fields, known as radiative heat transfer, which is fundamentally different from macroscopic cases described by the well known laws of Planck or Stefan-Boltzmann. We discuss recent theoretical progress describing such effects, and illustrate the dependence of both quantities on the shapes as well as the distances of the objects.

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