Dienstag, den 07.12.2010, 17:00 Uhr

Prof. Dr. Clemens Bechinger
Universität Stuttgart, 2. Physikalisches Institut

The Force of Fluctuations

Electromagnetic vacuum fluctuations induce long-ranged interactions between uncharged, conducting surfaces. A similar effect was predicted almost 30 years ago for confined binary mixtures near their critical point. This critical Casimir effect is due to the confinement of concentration fluctuations and can strongly modify the interactions of immersed colloidal particles. I review recent progress on the measurement of critical Casimir forces between a colloidal particle and a flat surface. Distance-resolved particle-wall interaction profiles are obtained with total internal reflection microscopy, which resolves forces down to 5 femtoNewton. Upon approaching the critical point, one finds long-ranged interactions that are attractive or repulsive, depending on the specific boundary conditions of the walls. This can be exploited in colloidal assembly on chemically patterned surfaces.

Ort: Hörsaal für Theoretische Physik, Linnéstraße 5
Alle Teilnehmer sind ab 16:30 Uhr zu Kaffee und Kuchen in die Aula eingeladen.