NIThePNational Institute for Theoretical Physics

NIThePcordially invites you to a seminar by:

Dr Christian Rohwer
Max Planck Institute for Intelligent Systems and University of Stuttgart, Germany

Date:	Wednesday 13 April 2016
Time:	14:00
Venue:	NIThePSeminar room

TITLE: Non-equilibrium aspects of confined, correlated systems

ABSTRACT: Correlations in confined systems (e.g. fluctuating fluids confined to films) give rise to a wealth of remarkable phenomena. Many equilibrium phenomena, e.g. the critical (thermal) Casimir forces, are well-understood theoretically and have been observed experimentally. Confined, correlated systems out of equilibrium, however, are less explored. I will discuss some our recent work on this topic.

Firstly, we consider a field theoretic dynamical model for correlated fluids (e.g. oil-water mixtures near / at the critical point) under confinement. In particular, we investigate the steady state in a sheared near-critical fluid film, in dependence on the separation of the plates and the bulk correlation length. We derive analogues of the bulk Green-Kubo relations for inhomogeneous shearing, and show that effective transport coefficients (such as viscosity) are affected by confinement.

Secondly, I discuss our current work regarding the time-evolution of fluctuation-induced forces from non-equilibrium quenches. In this setting, conservation laws strongly influence dynamical time-scales and interactions during relaxation to equilibrium.

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