

CONDENSED MATTER THEORY SEMINAR

Subject: **Absorbing state phase transitions in driven dissipative spin systems**

Speaker: **Dr. Michael Buchhold, Universität Köln**

Date & time: **Friday, April 21st, 2017 at 3:15 p.m.**

Venue: **Seminar room 1.114**

Phase transitions to absorbing states are among the simplest examples of critical phenomena out of equilibrium. The characteristic feature of these models is the presence of a fluctuationless configuration which the dynamics cannot leave, which has proved a rather stringent requirement in experiments. Recently, we proposed to seek such transitions in highly tuneable systems of cold atomic gases, which offers to probe this physics and, at the same time, to investigate the robustness of these transitions to quantum coherent effects. Here we specifically focus on the interplay between classical and quantum fluctuations in a simple driven open quantum model which, in the classical limit, reproduces a contact process, which is known to undergo a continuous transition in the "directed percolation" universality class. For strong coherent drive, this system features a line of non-equilibrium first order phase transitions, which terminate at a bicritical point. In this talk, I will present our recent results on the non-equilibrium phase transitions in this model with a special emphasis on the bicritical scaling regime and the dynamics close to the non-equilibrium first order transition.