

Theory of Condensed Matter: Hard Condensed Matter

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Note: Ansprechpartner: R. Orús und M. Rizzi

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Far from equilibrium quantum magnetism with ultracold polar molecules

Recent theoretical progress has indicated how to emulate tuneable models of quantum magnetism with ultracold polar molecules. In this talk, I am going to discuss the underlying ideas and the effective model obtained from this ansatz, which is a generalised t-J model with long-range interactions. The simplest realization in 1D is a t-J_{perp} model, in which only interactions of the XY-type survive. Using the DMRG, I discuss the effect of the absence of the original SU(2) symmetry of the t-J-model on the phase diagram, in particular in superconducting phases. In the second part of my talk, I will discuss features of these quantum simulators when going out-of-equilibrium.