



Thursday, Sept. 29th 2016 - 14:00 h
CFEL Seminar room III (Bldg. 99)

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Dynamical phase transitions in the long-range (power-law) interacting transverse-field Ising model

Dynamical phase transitions (DPTs) have gained a lot of interest in the past few years in a variety of quantum many-body systems, where a system in its groundstate is quenched by abruptly changing a control parameter of the Hamiltonian, such as interaction strength or external field. Afterwards, a DPT can be detected in one of at least two forms: a type-I DPT which is detected, after relaxation in time, through the nonanalyticity of an appropriate order parameter as a function of the control parameter through which the quench is effected; and a type-II DPT which is detected as a nonanalyticity of the Loschmidt echo return rate as a function in time, without giving care as to whether or not a stationary state has been reached in the time evolution. We study both types of DPTs in the one-dimensional long-range (power-law) interacting transverse-field Ising model using finite- and infinite-size time-dependent density matrix renormalization group techniques, and we discuss numerical results in relation to theory.

Host: Martin Eckstein

