EINLADUNG
zum Vortrag von
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Quenches in Ising models: Universality and dynamical phase transitions

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Dienstag, 4. Februar 2014, um 14:30 Uhr

Ort: Ernst-Mach-Hörsaal, Fakultät für Physik, Universität Wien,
         1090 Wien, Strudlhofgasse 4 / Boltzmanngasse 5, 2. Stock

Barrierefreier Zugang: Boltzmanngasse 5, Lift, 1. Stock rechts über den Gang zum Hintereingang des Hörsaals

Abstract:
We study [1] the real-time dynamics of the order parameter $<\sigma(t)>$ in the Ising field theory after a quench in the fermion mass, which corresponds to a quench in the transverse field of the corresponding transverse field Ising chain. The long-time behaviour is obtained analytically by a resummation of the leading divergent terms in a form-factor expansion for $<\sigma(t)>$. We develop a method for treating divergences associated with working directly in the field theory limit. We recover the scaling limit of the corresponding result obtained for the lattice model [2], thus showing universality in the quench dynamics. In the second part we numerically study the Loschmidt-Echo after quenches across a quantum critical point in the quantum Ising chain, the transverse axial next-nearest-neighbour Ising model, and the quantum Ising chain in a longitudinal magnetic field. In all cases we find non-analytic behaviour as recently predicted for the quantum Ising chain [3], thus showing that such features are generic to quenches across quantum critical points [4].

[1] D Schuricht and F H L Essler, J. Stat. Mech. (2012) P04017.
[2] P Calabrese, F H L Essler and M Fagotti, Phys. Rev. Lett. 106, 227203 (2011).
[3] M Heyl, A Polkovnikov, and S Kehrein, Phys. Rev. Lett. 110, 135704 (2013).
[4] C Karrasch and D Schuricht, Phys. Rev. B 87, 195104 (2013).

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