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Seminaires du LPTM , Universite de Cergy Pontoise

Jeudi 29 Mars 2018, 11 :00
LPTM, 4.13 St Martin II
Domaines : math-ph

Titre : *Out-of-equilibrium dynamics of quantum spin chain*

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Résumé : *We study the dynamics of a quantum spin chain (S=1/2 XXZ model), which is prepared at t=0 in a domain-wall initial sate, where the spins are initially pointing up on the left half-line and down on the right half-line. Using extensive time-dependent DMRG simulations we analyze the evolution of the magnetization profile, as a function of the anisotropy parameter (Delta) the Hamiltonian. These numerical results are compared with the predictions of a recently developed hydrodynamics approach [Castro-Alvaredo et al., PRX 2016 and Bertini et al. PRL 2016], which generalizes the conventional hydrodynamics to integrable one-dimensional quantum systems. For this domain wall problem the situation of the isotropic Heisenberg model (Delta=1) is particularly interesting and not yet fully understood, and at this point our data suggest a diffusive behavior [Misguich, Mallick & Krapivksy, PRB 2017].*