

# SEMPARIS – Séminaires en région parisienne

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## Seminares 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*

Orateur : Grégoire Misguich ( IPhT DRF Saclay/LPTM Cergy )

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 state, 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 & Kravtsov, PRB 2017].*

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