Condensed Matter Theory Center Seminar

CMTC

Tuesday, May 2
11:00 am – 12:15 pm
2205 John S. Toll Physics Building

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"Studies of the Loschmidt Echo and Entanglement Spreading in Two Dimensional Anisotropic Spin Systems"

Abstract: We describe a method for simulating the real time evolution of extended quantum systems in two dimensions. The method combines the benefits of integrability and matrix product states in one dimension. In particular it can be extended to systems whose geometry is that of an infinitely long cylinder. As a first example application, we present results for quantum quenches in arrays of coupled quantum Ising chains. In quenches that cross a phase boundary we find that the return probability shows non-analyticities in time. We also consider how entanglement spreads post-quench in the array of chains. We see notable differences in the spreading on whether the chains are in their ordered or disordered phase. This difference arises because of the presence of linearly confined bound states in the ordered phase. As a second example application, we consider entanglement spreading in anisotropic two dimensional Heisenberg models.

Host: Victor Galitski
Web: http://www.physics.umd.edu/cmtc/seminars.html

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