

Entanglement spectra in quantum systems

Vincenzo Alba
(MPI PKS Dresden)

Wed Jan 18 10:00 2012
(Seminar Room)

Abstract

The entanglement between two parts of a many-body system can be characterized in detail by the entanglement spectrum. Focusing on gapped phases of one-dimensional systems, I will show how this spectrum is dominated by contributions from the boundary between the parts. The boundary-local nature of the entanglement spectrum is clarified through its hierarchical level structure, through the combination of two single-boundary spectra to form a two-boundary spectrum, and finally through consideration of dominant eigenfunctions of the entanglement Hamiltonian. I will also discuss in detail the structure of the entanglement spectrum of the XXZ chain at $\Delta = -1$ which marks the transition between the gapless phase where the model is described by a $c = 1$ conformal field theory and the gapped ferromagnetic phase.

References:

- [1] V. Alba, M. Haque, and A. Läuchli, arXiv:1107.1726.