

ÉCOLE D'ÉTÉ « MÉCANIQUE STATISTIQUE DE NON-ÉQUILIBRE »
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Entanglement in many body systems

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In this mini-course I will describe recent advances in understanding the entanglement in large systems. I will first briefly review the general theory of entanglement, and its relation to correlations, i.e. Bell inequalities. I will then concentrate on scaling and area laws of entanglement in many body systems. In particular gapped systems, conformally invariant systems and quasi free fermions. I will describe possible attempts at measuring entanglement entropy and the relation of entropy and counting statistics, as well as connections to matrix product states, density matrix renormalization and other methods.

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