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Lecture: Tensor Networks and Quantum Field Theories

Monday, 28 June 2021 09:00 (1h 30m)

Certain Quantum Many-body states defined on lattices can be efficiently described in terms of tensor networks. Those include Matrix Product States (MPS), Projected Entangled-Pair States (PEPS), or the Multi-scale Entanglement Renormalization Ansatz. They play an important role in quantum computing, error correction, or the description of topological order in condensed matter physics, and are widely used in computational physics. In the last years,
it has also been realized their suitability to describe Lattice Gauge Theories, at least in low dimensions. In this talk I will review some of the basic ideas about tensor networks and their applications to lattice gauge theories, and explain current efforts to extend them to higher dimensions and to the continuum limit.

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