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Tensor network algorithms for high-dimensional quantum many-body systems

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We review some recent results on the development of tensor network algorithms and their application to high-dimensional many-body quantum systems and machine learning problems in High Energy Physics. In particular, we present results on topological two-dimensional systems, two dimensional Rydberg atom systems, and two and three-dimensional lattice gauge theories in presence of fermonic matter. Finally, we present their application to LHCb event classification and to the study of open many-body quantum systems, specifically to the computation of the entanglement of formation in critical many-body quantum systems at finite temperature.

Primary author(s) : Prof. MONTANGERO, Simone

Presenter(s) : Prof. MONTANGERO, Simone

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