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Quantum-Enhanced Machine Learning for Classifying Phases of Matter

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This present introduces a novel approach to classifying quantum phases of matter through the use of tensor networks within a quantum machine learning (QML) framework. Beginning with an overview of QML principles and their transformative impact on condensed matter physics, I will outline the role of tensor networks in modeling and analyzing many-body systems. By applying these models to tackle phase classification problems, we demonstrate how tensor networks enhance the understanding of intricate quantum behaviors. In particular, I will present results from the ANNNI and Haldane chain models, which illustrate the efficacy of tensor networks in accurately identifying diverse phases, even in complex, strongly correlated quantum systems.

Sessione

Quantum Machine Learning

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