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Computing quantum entanglement with machine learning

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Entanglement calculations in quantum field theories are extremely challenging and typically rely on the replica trick, where the problem is rephrased in a study of defects. We demonstrate that the use of deep generative models drastically outperforms standard Monte Carlo algorithms. Remarkably, such a machine-learning method enables high-precision estimates of Rényi entropies in three dimensions for very large lattices. Moreover, we propose a new paradigm for studying lattice defects with flow-based sampling.

Parallel Session (for talks only)

Quantum computing and quantum information

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