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Entanglement and renormalisation of spin systems in the generalised Landau paradigm

Friday, April 25, 2025 2:00 PM (1 hour)

Invoking results from topological quantum field theory, I will demonstrate that for every spin system representing a symmetric gapped phase, one can find a dual physical system whose dual symmetry is spontaneously broken. I will argue that this result has strong implications for the classical simulation of spin systems using variational tensor network methods, as this dual physical system minimises both the entanglement entropy and the required number of variational parameters. The applicability of this method will be demonstrated by introducing a generalised Density Matrix Renormalisation Group algorithm.

Presenter: DELCAMP, Clément (IHÉS)