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The Lefschetz thimble and the sign problem

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In this talk I will review the proposal to formulate quantum field theories (QFTs) on a Lefschetz thimble, which was put forward to enable Monte Carlo simulations of lattice QFTs affected by a sign problem. First I will review the theoretical justification of the approach, and comment on some open issues. Then, I will review the algorithms that have been proposed and are being tested to represent and simulate a lattice QFT on a Lefschetz thimble. In particular, I will review the lessons from the very first models of QFTs that have been studied with this approach.

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