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An Invitation to the Hamiltonian Formulation of Lattice Gauge Theories

Thursday, 20 November 2025 16:00 (1 hour)

Nonperturbative first-principles calculations are central to studies of cosmological phase transitions, including the hot electroweak and QCD phase diagrams. Euclidean path-integral Monte Carlo has yielded reliable results for thermal transitions. However, real-time dynamics, the QCD phase diagram at finite baryon density, and θ terms suffer from the sign problem. The Hamiltonian formulation of lattice gauge theories provides a complementary approach. In this talk, I will review the Hamiltonian approach to lattice gauge theories, outline its basic structure and numerical methods, and present recent results for two-color QCD at finite density within this framework.

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