

Radial Lattice Quantization of 3D ϕ^4 Field Theory

Thursday, 6 August 2020 14:00 (20 minutes)

We present numerical results for 3d ϕ^4 field theory on the $R \times S^2$ manifold in radial quantization using the quantum extension of the finite element method (QFE). The Monte Carlo study supports the QFE ansatz that once counterterms cancel effects from geometric defects in the UV, one reaches the nonperturbative conformal fixed point of the 3d Ising CFT. We demonstrate that including the Ricci curvature term for an improved lattice action drastically accelerates the approach to the continuum limit, opening the way for high precision calculation of scaling dimensions, OPE couplings, and the central charge.

Primary author: GASBARRO (*), Andrew (University of Bern)

Co-authors: BROWER, Richard; FLEMING, George

Presenter: GASBARRO (*), Andrew (University of Bern)

Session Classification: Theoretical Developments

Track Classification: Theoretical Developments