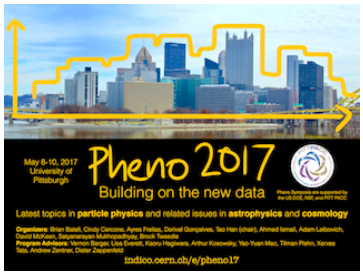

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Flowing to the Ising Model with Conformal Truncation

Tuesday, 9 May 2017 16:45 (15 minutes)

We study 1+1 dimensional ϕ^4 theory using the recently proposed method of conformal truncation. Starting in the UV CFT of free field theory, we construct a complete basis of states with definite conformal Casimir, $\mathcal{C}$. We use these states to express the Hamiltonian of the full interacting theory in lightcone quantization. After truncating to states with $\mathcal{C} \leq \mathcal{C}_{\max}$, we numerically diagonalize the Hamiltonian at strong coupling and study the IR dynamics. In particular, we determine the critical value of the coupling, at which the mass gap closes, and compute non-perturbative spectral densities of local operators, which are equivalent to real-time, infinite-volume correlation functions. Near the critical point, the resulting spectral densities reproduce those of the 2D Ising model.

Summary

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