

Renormalization group properties of scalar field theories using gradient flow

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Gradient flow has proved useful in the definition and measurement of renormalized quantities on the lattice. Recently, the fact that it suppresses high-modes of the field has been used to construct new, continuous RG transformations on the lattice, distinct from the usual blocking techniques in spin models and gauge theories. In this talk, we discuss two approaches to define an RG transformation which incorporate gradient flow: (1) the correlator ratio method, and (2) Langevin exact RG. We present preliminary numerical results for the critical exponents at the Wilson-Fisher fixed point of three-dimensional scalar ϕ^4 theory from both methods.

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