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Renormalization Group beta function and anomalous dimensions

Friday, 8 July 2022 12:30 (15 minutes)

The renormalization group (RG) beta function describes the running of the renormalized coupling and connects the ultraviolet and infrared regimes of quantum field theories. Performing numerical lattice field theory simulations we use gradient flow measurements to determine the RG β function nonperturbatively for SU(3) gauge systems with N_f = 2, 4 and 6 flavors in the fundamental representation. In addition we obtain the anomalous dimension as a function of the running coupling. Surprisingly, both the beta function and the anomalous dimensions follow approximately the 1-loop perturbative predictions.

In-person participation

Yes

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