Dimensional regularization as a regulator choice in the functional renormalization group

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Abstract

We obtain MS-bar beta functionals by a suitable regulator choice within the 1PI functional renormalization group. While this regularization strategy reproduces known perturbative results, it also allows for nonperturbative functional truncations in the modified minimal subtraction scheme. As an example, we compute the two loop beta function in four dimensional phi^4 theory with the functional renormalization group and the MS-bar regulator. We discuss applications to fermion systems and show that the regularization preserves supersymmetry in an on-shell formulation.

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