
Renormalized Functional Renormalization Group

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Abstract

We present a new version of the effective average action together with its flow equation. The construction entails in particular the consistency of fluctuation field and background field equations of motion, even for finite renormalization group scales. Here we focus on the quantum gravity application, while the generalization of this idea to gauge theories is obvious. Our approach has immediate impact on the background field approximation, which is the most prominent approximation scheme within the asymptotic safety scenario. We outline the calculation of quantum gravity observables from first principles using the new effective average action.

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