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Gauge dependence of Essential Quantum Einstein Gravity

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The Essential Functional Renormalisation Group, applied to quantum gravity, allows the metric to be reparametrised along the RG trajectory, such that only the essential couplings are renormalised. This allows to simplify the study of the properties of the fixed points. It is of interest to investigate the behaviour of the solutions with respect to a change of the gauge fixing parameters. In this work we compute the flow up to the fourth order in derivative expansion using a generic class of gauges for which the kinetic operator becomes nonminimal. To this end we implement the off-diagonal heat kernel technique also known as the Universal RG Machine. We compute the position of the fixed points using Landau and Feynman gauges and discuss the applicability of used approximations.

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