

## Remarks on Perturbative Quantum Gravity

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Is the lack of perturbative renormalizability in Einstein's general relativity a failure of the perturbative QFT framework to describe quantum aspects of gravity at the fundamental level? My answer is NO. In fact, the addition of quadratic curvature invariants to the Einstein-Hilbert action makes it possible to achieve "strict" renormalizability in four dimensions. In this talk I show that strict renormalizability is still a very powerful criterion for selecting unique and predictive theories in sub-Planckian regimes, even when gravity is taken into account. After describing some aspects of Quadratic Gravity, I will compare it with other approaches and argue that it is the most predictive as it can explain new physics in the sub-Planckian regime, for example, it offers a natural explanation for the inflationary phase in the early Universe. Finally, I will make some comments on the (super-)Planckian regime.

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