

# UV divergences of loops, the Higgs boson's low mass and the graviton loop in quantizing Einstein gravity

For loops with UV divergences, finite physical results obtained via infinity - infinity mean the physical transition amplitudes of loops are not mathematically well-defined. In this talk, a new method of UV-free scheme will be introduced to derive loop results without UV divergences. It provides a new perspective to the hierarchy problem of Higgs mass without fine-tuning within the Standard Model. In addition, how to describe loop corrections is a fundamental challenge in the quantization of Einstein gravity. Here we give it a try, and the result seems to be effective for graviton loops. This indicates that both loops of the renormalizable Standard Model and the non-renormalizable Einstein gravity can be described by the new method.

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