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From fakeons and Lee-Wick models to quantum gravity

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A consistent theory of quantum gravity is presented. It is built as a higher derivative theory, where the would-be ghosts are tuned into “fakeons” (i.e. fake degrees of freedom) by means of a new quantization prescription. The fakeons disentangle the real parts of the amplitudes from their imaginary parts, thereby making renormalizability compatible with unitarity. The theory is essentially unique. Calculations at one loop are presented to illustrate how the graviton/fakeon prescription works. A number of phenomenological predictions are addressed.

Author: Prof. ANSELMi, Damiano

Presenter: Prof. ANSELMi, Damiano

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