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Graviton couplings on Hilbert space

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A fresh attempt towards a quantum field theory of gravitons interacting with matter is based on the Fock space quantization of Wigner's helicity 2 representation, rather than canonical quantization of a massless rank-2 tensor field. In this way, all issues with indefinite state spaces, overshooting degrees of freedom, gauge fixing, etc. are avoided. It turns out that quantum consistency of this approach is exactly as restrictive on the structure of the interactions, as the postulate of general covariance in the canonical approaches, to the extent that general covariance may be regarded as a quantum prediction, rather than an assumed principle.

Primary authors: GASS, Christian (University of Warsaw); GRACIA-BONDÍA, José M.; REHREN, Karl-Henning (Universität Göttingen)

Presenter: GASS, Christian (University of Warsaw)

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