## Consistent interactions between the spin-two field and fermionic fields

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## Abstract

The cross-couplings among several massless spin-two fields (described in the free limit by a sum of Pauli-Fierz actions) in the presence of either a Dirac or a massive Rarita-Schwinger field are investigated in the framework of the deformation theory based on local BRST cohomology. Under the hypotheses of locality, smoothness of the interactions in the coupling constant, Poincaré invariance, (background) Lorentz invariance and the preservation of the number of derivatives on each field, we prove that there are no consistent cross-interactions among different gravitons in the presence of any of these fermionic fields. The basic features of the couplings between a single Pauli-Fierz field and one fermionic field of the above mentioned types are also emphasized.

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