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Non-locality in General Relativity and Quantum Field Theory

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I show that General Relativity coupled to a quantum field theory generically leads to non-local effects in the matter sector. These non-local effects can be described by non-local higher dimensional operators which remarkably have an approximate shift symmetry. When applied to inflationary models, our results imply that small non-Gaussianities are a generic feature of models based on General Relativity coupled to matter fields. However, these effects are too small to be observable in the Cosmic Microwave Background.

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