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Non-Gaussianities from Long Wavelength Modes ANNE-SYLVIE DEUTSCH, BÉATRICE BONGA, SUDDHASATTWA BRAHMA, SARAH SHANDERA, Penn State University — We consider a two field model; a light inflaton ϕ coupled to a heavy field in the hidden sector σ which has a cubic self-interaction. At low energies, the heavy field can be integrated out to get an effective description of the theory. With this effective Lagrangian, we derive correlation functions such as the powerspectrum and the bispectrum to look at non-Gaussianities. However, we only have access to a portion of the universe, and some very long wavelength modes ($\lambda > H$, nearly constant across our Hubble volume) can be unobservable to us, but still affect the correlation functions and generate non-Gaussianities in CMB data. We therefore derive the adjusted form for the observed correlation functions. It allows us to study with more accuracy the origin of the non-Gaussianities. This may have direct implications for renormalisation in cosmology, and affect the constraints that the detection of non-Gaussianities can have on inflation models.

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