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Inflation : Long Wavelength Modes and Non-Gaussianities ANNE-SYLVIE DEUTSCH, SARAH SHANDERA, BÉATRICE BONGA, SUDDHASATTWA BRAHMA, Pennsylvania State University — For our work, we assume that the whole inflation process can be separated into two main regimes; one described by a field Φ (the inflaton field) interacting weakly with Σ (in the hidden sector), and another one, at energies $\Lambda_{2\to1}$ and lower, where the field Σ has been integrated out and we are in a single field Φ model with a small sound speed c_s. During the two-field regime, coupling between short and long wavelength can generate non-equilateral non-Gaussianities. Upon imposing some conditions, such a generation of non-Gaussianities is not allowed in a single field regime. Our objective is to include the contribution of these long and short wavelength couplings in the single effective field model. For that, we derived an effective Lagrangian and studied the influence of each interaction term on the physics of inflation. We saw that both terms would lead to a similar sound speed and non-Gaussianities. Open questions remain concerning the effect of the splitting, which we are currently investigating. One could expect a different background evolution of the theory, or additional terms in the effective Lagrangian for the fluctuations $\mathcal{L}_{\text{eff}}$. Another possibility would be to also consider a modified initial state.

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