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# Trispectrum estimator in equilateral type non-Gaussian models

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# Conclusion and discussion

- Estimator for equilateral type primordial non-Gaussianity

  - Separable shape $$T_\zeta(k_1,k_2,k_3,k_4) = \frac{g_{\rm NL}^{equil}}{k_1k_2k_3k_4(\frac{k_1+k_2+k_3+k_4}{4})^5}\mathcal{P}_\zeta(k)^3$$

  - Shape correlation $$\bar{\mathcal{C}}(S_\mathcal{T}, S_{\mathcal{T}'}) = \frac{F(S_\mathcal{T}, S_{\mathcal{T}'})}{\sqrt{F(S_\mathcal{T}, S_\mathcal{T})F(S_{\mathcal{T}'}, S_{\mathcal{T}'})}}$$

  More accurate than considering only the equilateral configuration

- Predictions

  - special class of k-inflation $$g_{\rm NL}^{equil} = \frac{3X^3P_{,4X}}{16c_sP_{,X}^4}$$

  - single field DBI inflation $$g_{NL}^{equil} = \frac{17}{c_s^4}$$ ⟵ 87 % correlation

  - multi-field DBI inflation $$g_{NL}^{equil} = \frac{2.2}{c_s^4T_{\mathcal{R}S}^2}$$ ⟵ 33 % correlation

- Detectability

  Creminelli, Senatore, Zaldarriaga `07

  $$\Delta g_{\rm NL} \sim \frac{1}{\mathcal{P}_\zeta N_{pix}^{1/2}} \sim \frac{\Delta f_{\rm NL}}{\mathcal{P}_\zeta^{1/2}}$$

- Application to other models?

  Ghost inflation, Horava gravity, DBI Galileon, ….