El Gordo Galaxy Cluster taken by the DECam

Primordial non-Gaussianity from the angular clustering: prospects for DES

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Obra Social "la Caixa"

THE DARK ENERGY SURVEY

PNG for two-point statistics

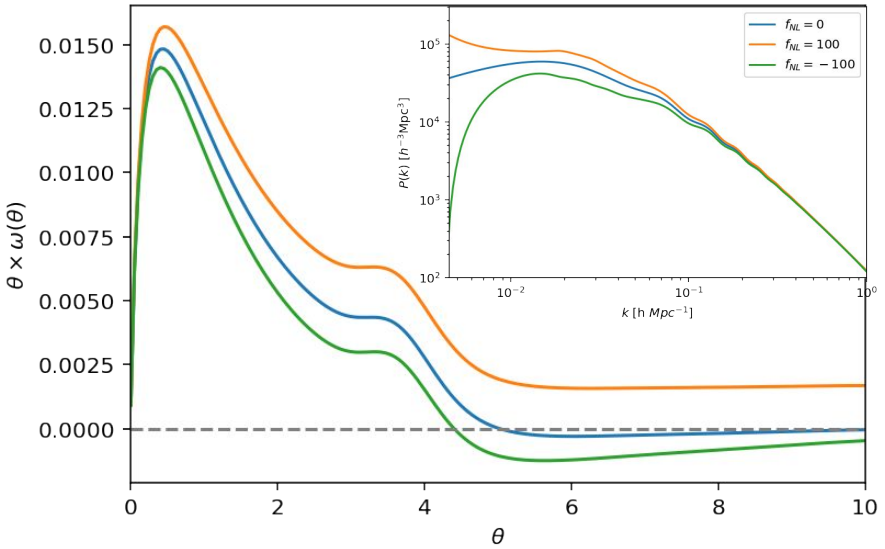
Scale dependent halo bias

$$b(k) = b_g + \frac{f_{NL}(b_g - 1)M(k,z)}{k^2}$$

Dalal et al. (2008)

Slosar et al. (2008

$$P(k, f_{NL}) = b^2(k, f_{NL})P_{DM}(k)$$



Angular correlation function (ACF)

$$\omega_{th}(\theta, f_{NL}) = \int dz_1 \int dz_2 \phi(z_1)\phi(z_2)\xi(r(z_1, z_2, \theta), \mu(z_1, z_2, \theta))$$

$$w(\theta, f_{\mathrm{NL}}) \sim f_{\mathrm{NL}}^2 \cdot \infty + w(\theta)$$

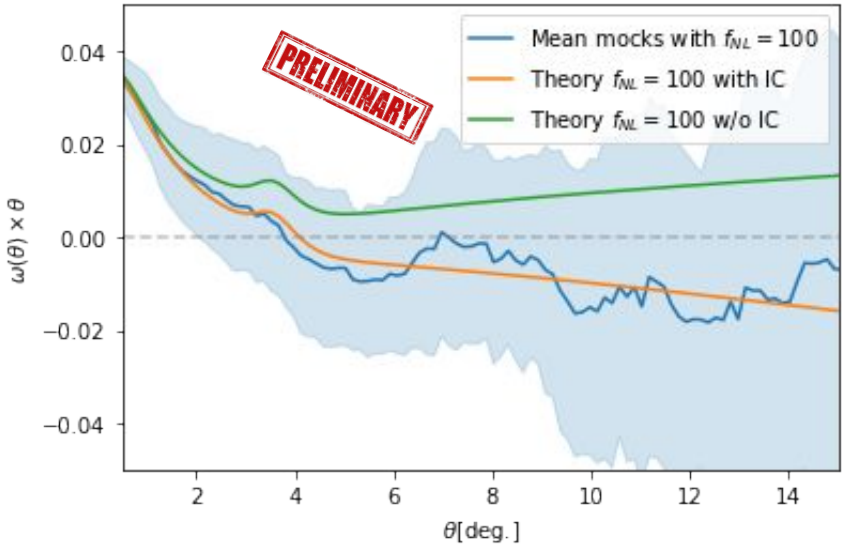
Integral constraint and the ACF with PNG

$$\omega^{*}_{\text{theory}}(\theta, f_{NL}) = \omega_{\text{theory}}(\theta) - I(f_{NL})$$

$$I(f_{NL}, \theta_{\text{max}}) = \frac{\sum_{\Omega}^{\theta_{\text{max}}} RR(\theta)\omega_{theory}(\theta, f_{NL})}{\sum_{\Omega}^{\theta_{\text{max}}} RR(\theta)}$$

[See A. J. Ross et al. 2012 for 2PCF]

GOLIAT-PNG sims. with fNL=100

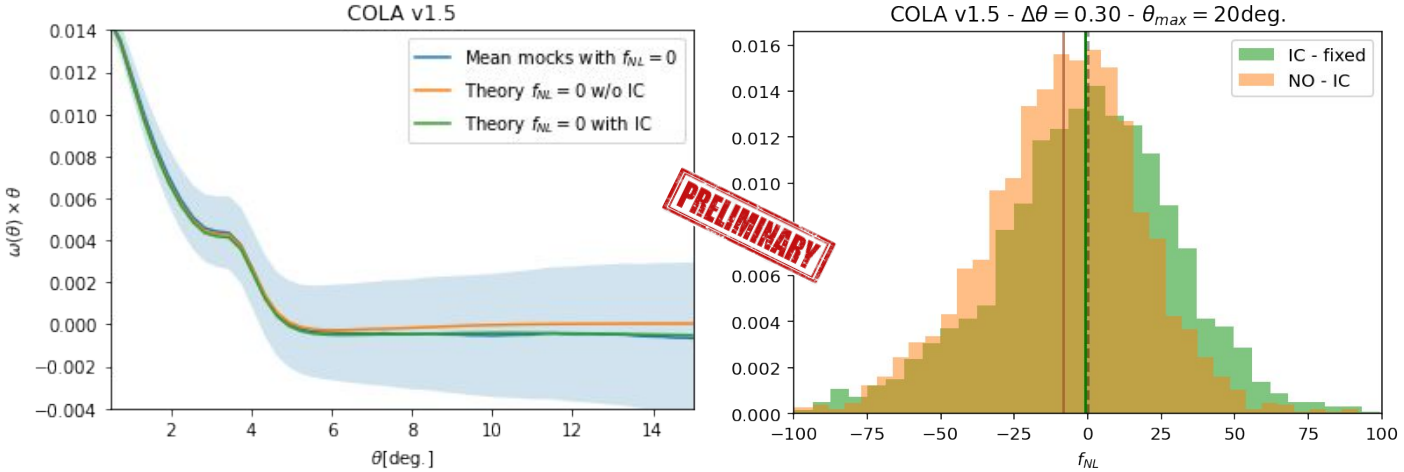


The **Integral Constraint (IC)** has the potential to avoid biased values for fNL

Prospects for the Dark Energy Survey

I. Ferrero et al. (2021)

COLA v1.5 sims. resemble the Dark Energy Survey data.



The ACF with PNG and including the **IC** can be used for constraining fNL with the Dark Energy Survey.