

Addressing the reviser concerns

Carlos García-García, Pilar Ruíz-Lapuente, David Alonso and
Miguel Zumalacárregui

September 26, 2019

We have carefully addressed the referee's questions and concerns. The modifications we have performed, for each of the numbered requests, are as follow:

1. Abstract. Line 9. Added explicit reference to CMB. We have changed *expanding on existing algorithms* to *expanding on existing algorithms for CMB*.
2. Page 8. After Eq. 2.44. Added GPE2 reference.
3. ...
4. Last sentence of 3.3. Added *or computed exactly as in [41, 44]*. In the second to last paragraph of Section 4, we added at the end *or exactly following Refs. [41, 44]*.
5. In Section 3.3, before previous sentence, we changed *If accurate covariances bars* to *If accurate covariance matrix elements*.
6. In Section 3.4, before Eq. 3.8, I have mentioned the Gaussian approximation of the likelihood: *Assuming flat priors and a fiducial Gaussian likelihood approximation [21]*.
7. Second paragraph of Section 3.4. Changed *for of two parameters* to *for the two parameters*.

Changes related to the CMB background:

- 1.

Extra changes:

1. Changed Δx^2 to $\Delta^2 x$.
2. Introduction. Line 3. Updated the set of references for CMB.
3. Added HEALPix project url and credits in the Acknowledgments.