



Astrophysics > Cosmology and Extragalactic Astrophysics

Future constraints on variations of the fine structure constant from combined CMB and weak lensing measurements

Matteo Martinelli, Eloisa Menegoni, Alessandro Melchiorri

(Submitted on 20 Feb 2012 (v1), last revised 22 Feb 2012 (this version, v3))

We forecast the ability of future CMB and galaxy lensing surveys to constrain variations of the fine structure constant. We found that lensing data, as those expected from satellite experiments as Euclid could improve the constraint from future CMB experiments leading to a $\Delta \alpha / \alpha = 8 \cdot 10^{-4}$ accuracy. A variation of the fine structure constant α is strongly degenerate with the Hubble constant H_0 and with inflationary parameters as the scalar spectral index n_s . These degeneracies may cause significant biases in the determination of cosmological parameters if a variation in α as large as $\sim 0.5\%$ is present at the epoch of recombination.

Comments: 6 pages, 6 figures, improved text and few typos corrected

Subjects: **Cosmology and Extragalactic Astrophysics (astro-ph.CO)**

Cite as: **arXiv:1202.4373v3 [astro-ph.CO]**

Submission history

From: Matteo Martinelli [[view email](#)]

[v1] Mon, 20 Feb 2012 16:44:31 GMT (36kb)

[v2] Tue, 21 Feb 2012 12:36:20 GMT (36kb)

[v3] Wed, 22 Feb 2012 18:27:05 GMT (36kb)

[Which authors of this paper are endorsers?](#)

Download:

- [PDF](#)
- [PostScript](#)
- [Other formats](#)

Current browse context:

astro-ph.CO

[< prev](#) | [next >](#)

[new](#) | [recent](#) | [1202](#)

Change to browse by:

[astro-ph](#)

References & Citations

- [INSPIRE HEP](#)
([refers to](#) | [cited by](#))
- [NASA ADS](#)

Bookmark([what is this?](#))

