

Extracting Cluster Information from small-scale CMB

Thursday 1 June 2023 16:22 (5 minutes)

The weak gravitation lensing of the Cosmic Microwave Background (CMB) [1] rows a wealth of information about the late-time universe in the CMB data we observe through ground-based and space-based telescopes. In this talk, I propose a method to probe Galaxy-cluster mass profiles from the lensing signature of CMB in arcmin scales. In the first part, I describe how a theoretical halo model [2] for a cluster gives rise to lensing signatures in the observed CMB. In the second part, I discuss how we are developing a method based on Maximum a posterior (MAP) estimator [3] of lensing potential to recover the cluster mass. Such an estimator will be influential in light of low noise level experiments like CMB S4.

References

- [1] A. Lewis and A. Challinor, Weak gravitational lensing of the CMB, Phys. Rept. 429 (2006) 1 [astro-ph/0601594].
- [2] J.F. Navarro, C.S. Frenk and S.D.M. White, The Structure of cold dark matter halos, Astrophys. J. 462 (1996) 563 [astro-ph/9508025].
- [3] J. Carron and A. Lewis, Maximum a posteriori CMB lensing reconstruction, Phys. Rev. D 96 (2017) 063510 [1704.08230].

Would you be interested in presenting a poster? (this will not impact the decision on your talk)

yes

Author: SAHA, Sayan (Indian Institute of Science Education and Research (IISER), Pune)

Presenter: SAHA, Sayan (Indian Institute of Science Education and Research (IISER), Pune)

Session Classification: Late Universe