

## **CMB lensing beyond the leading order: is there a new physical effect in E- and B-modes power spectra?**

*Friday, 14 June 2019 09:00 (50 minutes)*

In this talk, I will present the weak lensing correction, to the cosmic microwave background temperature and polarization anisotropies, including all the effects that go beyond the leading order. These are: post-Born corrections, LSS corrections and, for the polarization anisotropies, the correction due to the rotation of the polarization direction between the emission at the source and the detection at the observer. I will then concentrate on the effect coming from the rotation of the polarisation direction, showing how this is a true physical effect, which has to be taken into account at second order in perturbation theory, and clarifying inconsistencies on the treatment of this rotation in the recent literature. To conclude, focusing on B-mode power spectrum, I will consider the magnitude of this effect and discuss the reason because this has to be taken in consideration in future CMB survey, that aim to measure a tensor-to-scalar ratio of the order of 0.001.

**Presenter:** MAROZZI, Giovanni (Pisa University and INFN)