Recent Developments in Astrophysical and Cosmological Exploitation of Microwave Surveys - DTU Orbit (26/04/2019)

In this paper, we focus on the astrophysical results and the related cosmological implications derived from recent microwave surveys, with emphasis to those coming from the Planck mission. We critically discuss the impact of systematic effects and the role of methods to separate the cosmic microwave background (CMB) signal from the astrophysical emissions and each different astrophysical component from the others. We then review the state-of-the-art diffuse emissions, extragalactic sources, cosmic infrared background and galaxy clusters, addressing the information they provide to our global view of the cosmic structure evolution and for some crucial physical parameters, as the neutrino mass. Finally, we present three different kinds of scientific perspectives for fundamental physics and cosmology offered by the analysis of on-going and future CMB projects at different angular scales dedicated to anisotropies in total intensity and polarization and to absolute temperature.

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