

The Planck Legacy

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The most striking result from the last few decades of cosmological research is the most precise measurement of the cosmological parameters which confirms with high accuracy the minimal 6-parameter Lambda CDM model to account for cosmological observations over many decades and provides an amazing fit to an ensemble of cosmological observations on scales ranging from Mpc to the Hubble scale, and from the present day to the epoch of last scattering. Though many of the ingredients of the model remain unexplained from a fundamental physics point of view, the inflationary Lambda CDM is one of the most successful phenomenological models in physics and remains our best description of the Universe to date. The large improvement in resolution, sensitivity, foreground cleaning and systematics control from the Planck data, in temperature and polarization, provides the most stringent test of the model and has allowed to measure its parameters with high precision. Indeed, Planck has ended a phase in CMB studies that was opened by COBE in 1992: the CMB anisotropy map in temperature, being limited only by astrophysics, is the definitive CMB map. In polarization though the Planck full sky map is the most accurate to date, the final results are limited by systematics. In this talk I will present the Planck Legacy and outline the problems still left open by this incredible scientific and technical successful mission, operating in a challenging environment, like L2, without interruption over three times the initially planned mission duration, with performances exceeding expectations.