

Planck Results on Inflation

We will describe the implications for inflation from the Planck 2013 release of the cosmic microwave background temperature anisotropies measured in the nominal mission. Planck measures accurately the deviations from a scale invariant spectrum at high confidence level and establish a new upper bound to the amplitude of gravitational waves. Planck does not find statistical evidence for a non-zero running of the spectral index or for non-gaussianities, favoring simple inflationary models with a locally concave potential. Planck data are consistent with adiabatic initial conditions and constrain with unprecedented accuracy the amplitude and possible correlation of non-decaying isocurvature fluctuations. In models with arbitrarily correlated CDM or neutrino isocurvature modes, an anticorrelated isocurvature component can improve slightly the fit to Planck data due to a moderate tension between the Sachs-Wolfe plateau and higher multipoles. Other extensions to the standard inflationary scenario can provide a theoretical framework to interpret some of the anomalies on large angular scales.

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