

# Inflationary models and applications

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## **Abstract**

Study the cosmic microwave background: polarization and anisotropy. The inflationary model has been proposed to address the shortcomings of the standard model of cosmology. This cosmological model offers both a solution to the horizon problem and the flatness problem.

The idea of inflation states that just after the Big Bang, the observable universe has experienced a violent expansion phase that would allow it to grow a significant factor. The collected data of the European satellite Planck reinforce the scenario of inflation. Launched in 2009, the satellite analyzed for 15 months the "cosmic microwave background: CMB".

The analysis focused on the CMB temperature fluctuations. The theory of inflation also provides the polarization of this radiation. The satellite Planck was designed to also measure the polarization parameter. It is proposed in this paper to study the cosmic microwave background radiation, the anisotropy of its temperature and its polarization.

**Keyword:** Inflation,  $\Lambda$ CDM, inflationary models, FRW metric, cosmic microwave background (CMB) CMB anisotropy and polarization, ... .etc.