Cosmic Microwave Background and Supernova Constraints on Quintessence: Concordance Regions and Target Models

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abstract

We perform a detailed comparison of the Wilkinson Microwave Anisotropy Probe (WMAP) measurements of the cosmic microwave background (CMB) temperature and polarization anisotropy with the predictions of quintessence cosmological models of dark energy. We consider a wide range of quintessence models, including: a constant equation-of-state; a simply-parametrized, time-evolving equation-of-state; a class of models of early quintessence; scalar fields with an inverse-power law potential. We also provide a joint fit to the CBI and ACBAR CMB data, and the type 1a supernovae. Using these select constraints we identify viable, target models for further analysis.