Observational constraints on Galileon cosmology

We study the cosmology of a covariant Galileon field with five covariant Lagrangians and confront this theory with the most recent cosmological probes: the type Ia supernovae data (Constitution and Union2 sets), cosmic microwave background (WMAP7) and the baryon acoustic oscillations (SDSS7). In the Galileon cosmology with a late-time de Sitter attractor, there is a tracker that attracts solutions with different initial conditions to a common trajectory. Including the cosmic curvature K, we place observational constraints on two distinct cases: (i) the tracker, and (ii) the generic solutions to the equations of motion. We find that the tracker solution can be consistent with the individual observational data, but it is disfavored by the combined data analysis. The generic solutions fare quite well when a non-zero curvature parameter is taken into account, but the Akaike and Bayesian information criteria show that they are not particularly favored over the LCDM model.

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