

Abstract Submitted  
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**Accelerated Expansion and the Formation of Cosmic Structures**

JOHN BOTKE, None — In a recent paper, we presented a new model of cosmology based on the idea of a universe with time-varying curvature dominated by vacuum energy acting as its own source. In this model, the universe began with an exponential Plank era inflation before transitioning to a spacetime described by Einsteins equations. While no explicit model of the Plank era is as yet known, a number of its properties are established. It is shown that structures came into existence during that inflation that were later responsible for all cosmic structures. A new solution of Einsteins equations incorporating time-varying curvature is presented which predicts that the scaling was initially power law with a parameter of  $\gamma = 0.5$  before transitioning to a present-day exponential expansion. A formula relating the curvature to the vacuum energy density appears as part of the solution. A non-conventional model of nucleosynthesis provides a solution of the matter/antimatter asymmetry problem and a non-standard origin of the CMB. The CMB power spectrum is shown to be a consequence of the same large structures and of uncertainties also embedded in the vacuum during the initial inflation. Using Einsteins equations, it is also shown that so-called dark matter is, in fact, vacuum energy.

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None

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