

Abstract Submitted
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Investigating the Effects of Charge Asymmetry on the Early Structure of the Universe CYNTHIA KNIGHT, LEANNE DUFFY, BRUCE CARLSTEN, LANL — The standard model of cosmology describes a charge neutral universe. It does not, however, completely rule out a small net charge. Currently, the best limit on this small charge is less than $10^{-26}e$ per baryon (where e is the charge of an electron) from the anisotropies of the Cosmic Microwave Background Radiation. We investigate the effect of a net charge on the early structure formation in the universe. A Friedmann-Roberston-Walker universe with uniform charge will have no observable electric or magnetic fields. Using a toy model of a spherical charge distribution, we demonstrate that charge in the universe can have interesting effects. We discuss our approach to investigating the effects of charge on structure formation, using linear cosmological perturbation theory. This work, paired with observation, will give new information on charge in the universe.

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