

Natural Analogies Between Cosmology and Basic Condensed Matter Physics

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We show that the spatially homogeneous and isotropic evolution of a macroscopic Coulomb system of identical particles obeys equations that have the structure of the cosmological equations of the general theory of relativity. There is a Hubble law, and the background charge (if present) mimics the effect of a negative cosmological constant. Specifically, Coulomb explosions mimic the non-singular open cosmologies in negatively curved spaces, while breathing modes in conductors model oscillatory universes including the anti-de Sitter space.