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**The Growth of the Density Fluctuations in the Scale-Invariant Vacuum Theory** VESSELIN GUEORGUIEV, Ronin Institute for Independent Scholarship, USA, ANDRE MAEDER, Geneva Observatory, Switzerland — The growth of the density fluctuations is an important cosmological test. In the standard EdS model the growth of the density perturbations evolves with redshift $z$ like $(\frac{1}{1+z})^s$ with $s = 1$. Without the introduction of dark matter, this is not fast enough to form galaxies and to account for the observed present-day inhomogeneities. This view is challenged in the present paper [1] by using a Scale-Invariant Vacuum Theory (SIVT) as a framework for cosmology. From the continuity equation, the corresponding Euler and Poisson equations are written in the scale-invariant framework, the equation governing the growth of density fluctuations $\delta$ is obtained as well. Starting from $\delta = 10^{-5}$ at a redshift around 1000, numerical solutions for various density background are obtained. The growth of density fluctuations is much faster than in the standard EdS model. The $s$ values are in the range from 2. 7 to 3. 9 for $\Omega_{\rm m}$ between 0. 30 and 0. 02. This enables the density fluctuations to enter the nonlinear regime with $\delta > 1$ long before the present time, typically at redshifts of about 10, without requiring the presence of dark matter.

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