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On the Perturbations of the Rh=ct Universe

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Decades of astronomical observation have shown that the universe is expanding at an accelerated rate. The standard model of cosmology is the closest we have to a standard theory of gravitation but it fails to adequately describe our universe without the ad hoc introduction of dark energy and dark matter to late-time cosmology and inflation to early-universe cosmology. This has certainly created dilemmas for cosmology and the wider astronomical community, and several alternative cosmological models are being considered at the moment. Current work is limited to the study of background dynamics so a brief overview of the equations that govern the evolution of cosmological perturbations in the $R_h = ct$ model is presented. This model is consistent with observations and has received particular attention in the last few years. Like the ΛCDM model, the $R_h = ct$ model is based on a FLRW cosmology with the cosmic fluid's total energy density ρ and pressure p satisfying the vanishing total gravitational mass condition: $\rho + 3p = 0$. The results derived will be compared to those from the standard model and analysed to see if the model allows for the formation of structure in the universe.

Apply to be considered for a student ; award (Yes / No)?

Yes

Level for award;(Hons, MSc, PhD, N/A)?

MSc

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