



High Energy Physics - Theory

Diversity in the Phoenix Universe

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It has recently been argued by Copeland et al. that in eleven dimensions two orbifold planes can collide and bounce in a regular way, even when the bulk metric is perturbed away from Milne spacetime to a Kasner solution. In this paper, we point out that as a consequence the global "phoenix" structure of the cyclic universe is significantly enriched. Spatially separated regions, with different density fluctuation amplitudes as well as different non-gaussian characteristics, are all physically realized. Those regions containing by far the most structure are specified by a fluctuation amplitude of $Q \sim 10^{-4.5}$ and local non-gaussianity parameters $f_{\text{NL}} \sim O(\pm 10)$ and $g_{\text{NL}} \sim O(-10^3)$, in agreement with current observations.

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