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The Abundance of Extreme Cosmic Voids

Wednesday 9 September 2015 09:00 (20 minutes)

Cosmic voids have been shown to be an effective probe of cosmology, complementary to galaxy clusters. But how reliable are the current theoretical models for void abundance?
In this talk, I will explain how the theory of "extreme cosmic voids" can be used as a consistency test for theories of void abundance. I will give a simple derivation of the size of the largest voids expected within a given redshift and volume. This extreme-void model is based on the exact extreme-value statistics which has previously been successfully applied to massive galaxy clusters.
I will show that, when compared with simulations and observations (e.g. SDSS voids), the Sheth and Van de Weygaert model (and simple adjustments thereof) generally yields a poor fit to the extreme-void abundance even though it appears to give a good fit to the void distribution over some radius range. I will discuss some insights into possible resolutions.
Based on 1502.07705 (JCAP in press).

Presenter: CHONGCHITNAN, Siri (University of Hull, United Kingdom)

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