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# The Secret Life of Voids: Unifying Density Profiles and their Evolution

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Cosmic voids occupy the majority of the Universe's volume and are dominated by dark energy at earlier times, making them one of the most promising probes for current and upcoming surveys. However, fully exploiting this potential requires a robust understanding of their evolution and modeling. We track the history of halo-defined voids from  $z = 5$  to the present day using hydrodynamical simulations across multiple scales. We demonstrate that relying on traditional metrics, such as absolute size, can be misleading and may obscure the true nature of voids. Instead, our analysis reveals a fundamental property driving their evolution, leading to a surprisingly simple description of their late-time behavior. We also introduce a phenomenological model that accurately predicts a universal density profile based entirely on measurable parameters, effectively bridging the gap between theory and observation. This talk establishes the framework necessary to transform voids into pristine cosmological laboratories for the next generation of surveys.

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