

# Cosmic Cartography 2022: Exploring the Cosmic Web and Large-Scale Structure



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## Hierarchical structure of voids

*Thursday, 10 March 2022 15:45 (20 minutes)*

Voids possess a very complex internal structure and dynamics. Our work studies the hierarchical structure present in the cosmic web identified on a set of numerical simulations. We use the SpineWeb method, which provides a complete framework for the characterization of the cosmic web into its primary constituents: voids, walls, filaments and clusters. We aim to characterize the inner compositions of voids at a given scale by detecting their internal filamentary structure. Even though voids are by definition empty, one can find galaxies in their interior in some cases. We employ a semi-analytical galaxy evolution model to explore the impact of the cosmic web detected inside voids in galaxies' properties. Our work shows the influence of the cosmic web constituents on the void galaxies properties, such as mass, angular momentum, and age. It highlights the importance of considering the substructure of underdense regions to understand the evolution and properties of void galaxies.

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