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Constraining cosmological parameters with the β -skeleton of the cosmic web

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Constraining cosmological parameters from observational data is one of the main challenges in observational cosmology. To address it, we present results based on the β -skeleton, a new technique designed to find a graph describing the underlying web structure in spatial point distributions. From the β -skeleton we define an entropy scalar and show how it can be used as a cosmological probe by measuring changes in entropy as a function of the β parameter used to build the skeleton. We test this concept both on simulated and observational data from the Sloan Digital Sky Survey. We finalize by showing how future projects such as the Dark Energy Spectroscopic Instrument can be used to take advantage of this new technique.

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