COSMOSTATS 2023 - Bridging the Gap: Statistical Modeling of Cosmology Extremes



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The non-Gaussian Universe: a Challenge in Cosmological Data Analysis

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One of the main goals of observational cosmology is the measurement of cosmological parameters, using the Cosmic Microwave Background (CMB) or the galaxy distribution 2-point function (power spectrum). This procedure would optimally extract all cosmological information if the CMB and galaxy density fields were perfectly Gaussian. Non-Gaussian features are however imprinted in these fields, both through gravitational evolution of cosmic structures and through possible non-linear interactions during the primordial inflationary process. Cosmological non-Gaussianity is therefore a powerful tool to test inflation, improve our constraints on cosmological parameters and get a better understanding of the structure formation process. Its observational and statistical study is a complex data analysis task, which I will discuss in this talk.

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