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Cosmology with galaxy clustering: a joint analysis of the power spectrum and bispectrum

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Stage IV galaxy redshift surveys will sample the large-scale structure of the Universe over unprecedented volumes with high-density tracers, allowing for precise measurements of the clustering statistics. In order to properly exploit the full potential of such data, a robust likelihood pipeline is required, starting with an accurate theoretical prediction of cosmological observables, down to constraints on cosmological parameters. The main probe used in the context of spectroscopic galaxy surveys is the galaxy power spectrum. However, it has been shown that the inclusion of higher order correlation functions in the analysis can improve the accuracy with which cosmological parameters are measured. I will present a software for the joint likelihood analysis of the galaxy power spectrum and bispectrum, describe its validation against N-body simulations and its application to data from the BOSS survey. Moreover, I will discuss forecasts and preparation for data from the upcoming Euclid survey.

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