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## **COFFE, with no brakes - fast computation of the galaxy two-point correlation function in redshift-space**

The 3-dimensional distribution of galaxies provides us with a powerful way of testing cosmological models. In order to extract information from this distribution, data has to be compressed using adequate estimators. One of the primary ones we use are the galaxy number counts, and its statistics: the 2-point correlation function, and its Fourier transform, the power spectrum. Past and current surveys have mostly focused on the dominant contributions to the number counts - galaxy overdensities and redshift-space distortions (RSD) - which may not be a suitable approximation for future surveys.

In this talk, I introduce COFFE, a code for a fast and accurate computation of all of the contributions to the 2-point correlation function of galaxy number counts. As an example application, I show that neglecting the effect of gravitational lensing on the galaxy number counts in future surveys could bias the analysis of cosmological models. Finally, I show how the computation of the 2-point correlation function can be sped up more than 10000 times using the flat-sky approximation, while still retaining a reasonable level of accuracy.

**Author:** Mr JELIC-CIZMEK, Goran (Universite de Geneve (CH))

**Presenter:** Mr JELIC-CIZMEK, Goran (Universite de Geneve (CH))

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