

The dipole of the galaxy bispectrum

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The bispectrum will play an important role in future galaxy surveys. On ultra-large scales it is a key probe of primordial non-Gaussianity which can help differentiate between different models of the early universe. On these scales a variety of relativistic effects come into play once the galaxy number-count fluctuation is projected onto our past lightcone. The leading relativistic correction in the galaxy bispectrum generates a significant dipole, mainly from the Doppler. The amplitude of the dipole can be $\sim 10\%$ of the monopole on equality scales. Such a dipole is absent in the Newtonian approximation to the redshift space bispectrum, so it offers a clear signature of relativistic effects on cosmological scales in large scale structure.

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