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Developing a unified pipeline for large-scale structure data analysis with angular power spectra. The importance of redshift-space distortions for galaxy number counts

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We develop a cosmological parameter estimation code for (tomographic) angular power spectra analyses of galaxy number counts, for which we include, for the first time, redshift-space distortions (RSD) in the Limber approximation. This allows for a speed-up in computation time, and we emphasise that only angular scales where the Limber approximation is valid are included in our analysis. Our main result shows that a correct modelling of RSD is crucial not to bias cosmological parameter estimation. This happens not only for spectroscopy-detected galaxies, but even in the case of galaxy surveys with photometric redshift estimates. Moreover, a correct implementation of RSD is especially valuable in alleviating the degeneracy between the amplitude of the underlying matter power spectrum and the galaxy bias. We argue that our findings are particularly relevant for present and planned observational campaigns, such as the Euclid satellite or the Square Kilometre Array, which aim at studying the cosmic large-scale structure and trace its growth over a wide range of redshifts and scales.

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