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Constraints on the growth rate using the observed power spectrum and multi-tracers

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The large-scale structure growth index γ provides a consistency test of the standard cosmology and is a potential indicator of modified gravity. We investigate the constraints on γ from next-generation spectroscopic surveys (like SKA, Euclid and DESI), and possible improvements from combining these using a multi-tracer technique. Using the angular power spectrum, which is observed in redshift space, we avoid the need for an Alcock-Packzynski correction. It also naturally incorporates cosmic evolution and wide angle effects, without any approximation. We include the cross-correlations between redshift bins, using a hybrid approximation when the total number of bins is computationally unfeasible.

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