Optimizing the Extraction of Cosmological Information from the Latest Spectroscopic Redshift Surveys

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Indicator Power Spectra

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Indicator functions identify regions of a given density characterizing the density dependence of clustering. I show that indicator-function power spectra are biased versions of the linear spectrum on large scales. A first principle calculation for this bias reproduces simulation results. I provide a simple functional form for the translinear portion of the indicator-function spectra. These spectra facilitate surgical excision of non-linearity and thus significantly increase the reach of linear theory and extract information beyond the traditional liner power spectrum. Indicator spectra also facilitate the calculation of theoretical covariance matrices for counts-in-cells (CIC), facilitating parameter estimation with complementary CIC methods.

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