Higher-order accurate polyspectral estimation with flat-top lag-windows

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Abstract Improved performance in higher-order spectral density estimation is achieved using a general class of infinite-order kernels. These estimates are asymptotically less biased but with the same order of variance as compared to the classical estimators with second-order kernels. A simple, data-dependent algorithm for selecting the bandwidth is introduced and is shown to be consistent with estimating the optimal bandwidth. The combination of the specialized family of kernels with the new bandwidth selection algorithm yields a considerably improved polyspectral estimator surpassing the performances of existing estimators using second-order kernels. Bispectral simulations with several standard models are used to demonstrate the enhanced performance with the proposed methodology.