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THREE-like approach to multivariate spectral estimation: features and extensions

THREE-like spectral estimators, firstly introduced by Byrnes, Georgiou and Lindquist, hinge on the use of a bank of filters as a mean of obtaining spectral interpolation data. Spectral estimation is thus recast in the form of a spectrum approximation problem, which consists in minimizing a suitable spectral pseudo-distance index, with respect to a given prior density, under the constraints imposed by the covariance at the output of the filter bank. THREE-like spectral estimators allow to deal with multivariate spectral estimation effectively. Moreover, they feature high-resolution properties and provide better performances than traditional estimators when short observation records are available. In the talk we will tackle two important issues. The first one arises from the fact that the estimate of the output covariance, which is based on the sample data, has to satisfy the constraints imposed by the filter bank. The second problem consists in the choice of an adequate pseudo-distance for the spectrum approximation problem which improves the complexity upper bound (in the multichannel framework) for the solution.