

Prony Methods for Sparse Reconstruction of Structured Functions

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Abstract

In this talk, we describe the Prony method and whose relatives. We sketch a frequently used Prony-like method for equispaced sampled data, namely the ESPRIT method. For the reconstruction of sparse eigenfunction expansions, a generalized Prony method is presented. The Prony methods are applied to the recovery of structured functions (such as exponential sums and extended exponential sums) and of sparse vectors. The recovery of spline functions with arbitrary knots from Fourier data is also based on Prony methods. Finally, some numerical examples are given.

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