

A multivariate generalization of Prony's method

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Motivated by a physical problem, in 1795 de Prony gave a method to reconstruct the parameters of an exponential sum, i.e. a linear combination of complex exponential functions, from a finite number of samples. By his approach, the problem is reduced to solving an algebraic equation in a single indeterminate. Recently, several variants and generalizations of Prony's method have been studied. In this talk we give a generalization for exponential sums in an arbitrary finite number of variables based on solving systems of multivariate algebraic equations and consider some of its algebraic and numerical properties.

This talk is based on joint work with Stefan Kunis, H. Michael Möller, Thomas Peter, and Tim Römer.