

Generalized Exponential Prony Method

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It was shown by Peter&Plonka that the classical Prony method can be easily generalized to linear operators and the reconstruction of associated linear combinations of eigenfunctions. Although finding such operators and their corresponding sampling-schemes is a non-trivial task in general, examples were given in the past by Peter&Plonka and also by Potts&Tasche.

In this talk, a general approach is introduced to derive families of eigenfunction expansions of associated strongly continuous semi-groups. Furthermore, practically realizable sampling-schemes for the reconstruction of such structured functions are presented. Additionally, it is shown how this approach already summerizes many of the former and new examples under the class of Generalized Exponential Prony (GEP) methods.

Joint work with: Gerlind Plonka (University of Goettingen), Inge Keller (University of Goettingen).