



universität  
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Fakultät für Mathematik

## Mathematisches Kolloquium

Mittwoch, 21. März 2018

Sky Lounge

### EINLADUNG

**Gerlind Plonka-Hoch**

(Universität Göttingen)

**"Reconstruction of non-stationary signals by the  
generalized Prony method"**

## **"Reconstruction of non-stationary signals by the generalized Prony method"**

### **Abstract:**

*In this talk, we reconsider the problem of parameter identification in short exponential sums which can be solved by the well-known Prony method. The exponential sum can be also interpreted as a sparse linear combination of eigenfunctions of the shift operator. This view led to a generalization of Prony's method in Peter & Plonka (2013), where we have shown that sparse expansions of eigenfunctions of linear operators can be reconstructed completely by using only a small number of suitable sample values. In this talk, we consider special classes of generalized shift operators and corresponding sets of eigenfunctions that admit a reconstruction of structured functions from function values. In particular, we can show that the reconstruction of expansions of shifted Gaussians, Gabor expansions with Gaussian window functions, Gaussians with different scaling as well as non-stationary signals with special monotone phase functions can be reconstructed by the generalized Prony method. These results have been obtained jointly with Thomas Peter (University of Vienna), Kilian Stampfer, and Inge Keller (University of Göttingen).*

**15.45 Uhr: Kaffeejause**

**16.15 Uhr: Vortrag**

**vinum cum pane im Anschluss**

Martin Ehler  
Christian Krattenthaler