



universität  
wien

Fakultät für Mathematik

## Mathematisches Kolloquium

### EINLADUNG

**Robert Plato**  
(Universität Siegen)

**"The normalization-free regularization of linear ill-posed problems"**

## **"The normalization-free regularization of linear ill-posed problems"**

### **Abstract:**

Ill-posed problems arise in many applications like medical imaging, geomathematics, non-destructive testing or parameter identification. It lies in the nature of such problems that they are unstable with respect to data perturbations which may arise, e.g., from measurement errors. This instability requires a special treatment called regularization. Usually linear ill-posed problems are normalized before such a regularization is employed, where normalization means applying the adjoint of the operator to the equation under consideration. Some classes of linear ill-posed problems, e.g., symmetric positive semidefinite problems or nonsymmetric accretive equations in Hilbert spaces, allow a regularization without normalization which in fact is desirable both for reasons of computational performance and conservation of mathematical structure. In this talk we review some regularization methods with avoid such normalization, e.g., Richardson iteration or the Lavrentiev method, and resolvent conditions serve as a basic tool here. For the latter method we also present new results on adjoint source conditions as well as converse and saturation results.

**Zeit: Mittwoch 12. Oktober 2016**  
**15.45 Uhr Kaffeejause,**  
**16.15 Uhr Vortrag,**  
**vinum cum pane im Anschluss**

**Ort: Fakultät für Mathematik,**  
**Oskar-Morgenstern-Platz 1,**  
**Sky Lounge**

Otmar Scherzer  
Christian Krattenthaler