



VIENNA  
DOCTORAL  
SCHOOL  
MATHEMATICS

# PhD Colloquium

*Denise Schmutz:*

## Three-Dimensional Motion Reconstruction from Projection Data

An inverse problem is a mathematical framework that is used to obtain information about a physical object or system from observed measurements. The solution to this problem usually provides information about a physical parameter that cannot be directly observed. Thus, inverse problems are some of the most important mathematical problems in science and mathematics with many different applications including medical imaging, geophysics, computer vision and astronomy.

In this talk we will analyze an inverse problem arising from optical microscopy. We consider an object that is imaged while being moved with optical tweezers. Due to the nature of the experiment the motion of the object is unknown. From a mathematical viewpoint we will pursue the question whether it is possible to reconstruct the object's motion from a series of projection images. Moreover, we will look at some simulations and numerical results.

**16. January,**

**15:00-15:45**

**SkyLounge, OMP-1**