

STATISTICS COLLOQUIUM

WEDNESDAY, MAY 16, 2012

TALK: 3:00 PM — SCIENCE CENTER RM. 705

The Multiscale Dantzig Selector: From Ion Channels to Nanoscale Cell Microscopy

Axel Munk

**Institute for Mathematical Stochastics, Georg August
University Goettingen and Max-Planck-Institute
for Biophysical Chemistry**

ABSTRACT

In this talk we will discuss a general concept of statistical multiscale analysis in the context of signal detection and imaging. This provides a large class of fully data driven regularization methods which can be viewed as a multiscale generalization of the Dantzig selector. We address computational issues as well as the required extreme value theory of the multiscale statistics. Two major examples include change point regression and locally adaptive total variation image regularization for deconvolution problems. Our method is applied to ion channel recordings in biomembranes and nanoscale biophotonic cell microscopy.