# Analysis and Applications:
# A Conference in Honor of Elias M. Stein

**Princeton University, Princeton, New Jersey**
**May 16-20, 2011**

Speaker: Christoph Thiele (University of California, Los Angeles)

Date/Time: Wednesday, May 18, 2011 / 9:00-10:00 am

Talk Title: "The Hilbert transform along vector fields depending on one variable"

Abstract:

We define the Hilbert transform along a vector field in the plane as follows: At each point of the plane we take the Hilbert transform of the restriction of a given function to the straight line passing through the point in direction of the vector field, and evaluate this Hilbert transform at the given point. In joint work with Michael Bateman we proved that the Hilbert transform along a vector field that is constant along vertical lines is bounded in $L^p$ for $p>3/2$. Only for $p=2$ this was known before and is equivalent to the Carleson-Hunt theorem in $L^2$. Our work relates to a conjecture of Stein, which conjectures $L^2$ boundedness of a truncated Hilbert transform along a Lipshitz vector field.