

# Mathematics Colloquium at IUB

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will speak on

*Time-Frequency Analysis:  
From Wireless Communications  
to Abstract Harmonic Analysis*

**Date:** Monday, September 18, 2006

**Time:** 17:15

**Place:** Lecture Hall Research II, IUB

**Abstract:**

In the talk I will discuss the relation between problems in wireless communication and time-frequency analysis. I will explain the basic principle of OFDM (orthogonal frequency division multiplexing) and its formulation in time-frequency analysis. Surprisingly, the so-called pulse-shaping problem is equivalent to a problem on twisted convolution, and its general solution requires experience and tools in abstract harmonic analysis.

Similarly, the modeling of the transmission channel leads to new and interesting problems on pseudodifferential operators. Their treatment is outside the standard theory of PDE and requires a genuine time-frequency approach.

The talk is intended for a general audience and does not require any prerequisites.

**Colloquium Tea** at ca. 16:45 in the Tea Room of Research II, close to the lecture hall. Everybody is welcome!