Title: *Meaningful decay behavior of higher dimensional continuous wavelet transforms*

Speaker: Mahya Ghanderari (U. Delaware, USA)

Abstract: The wavefront set of a tempered distribution u is the set of points $t \in \mathbb{R}^n$ and directions ξ in the sphere S^{n-1} along which u is not smooth at t. In the recent years, certain wavelet-type transformations (for example the curvelet or shearlet transformation) have gained considerable attention, due to their potential for identifying the wavefront set of a signal by inspecting the decay rate of the corresponding transformation coefficients.

Recently, many efforts have been made aiming to generalize the above characterization for higher dimensional cases. Higher dimensional wavelet transforms are constructed using square-integrable representations of $\mathbb{R}^n \rtimes H$ where H can be any suitably chosen dilation group. In this talk, we consider the problem of characterizing the Sobolev wavefront set of a distribution for a higher-dimensional wavelet transform in two important cases where: 1) the mother wavelet is compactly supported, and 2) the mother wavelet has compactly supported Fourier transform.

This talk is based on an ongoing joint project with Hartmut Fuhr.