Wavelets and Fractals: a Groupoid Approach

Marius Ionescu
Dartmouth College

Thursday, April 12, 2007
007 Kemeny Hall, 4:00 pm
(Tea 3:30 pm 300 Kemeny Hall)

Abstract

Wavelets and fractals share the feature of "scaling". Groupoids help to clarify this feature and help to reveal the interconnections among the constructs used to build fractals and wavelets. In this talk, we want to discuss which aspects of wavelet theory are intrinsic to the underlying geometry of the situations under consideration and which are artifacts of special representations. We want to identify, in terms of groupoids, the key parameters used to construct wavelets and to identify their degrees of freedom. We will make the connection with recent work by Jorgensen and his coauthors, as well as with work of Larsen and Raeburn. The talk should be accessible to graduate students. I plan to keep the prerequisites to a minimum; the basics of Hilbert spaces and linear operators should suffice for most of the talk. No prior knowledge of groupoids is required.