1102-93-8 **Palle E T Jorgensen*** (palle-jorgensen@uiowa.edu), P Jorgensen, Math, MLH, University of Iowa, Iowa City, IA 52242. *Analytic, algebraic, and group theoretic, tools in wavelets and filters.*

The talk will begin with multiresolutions, and then turn to matrix valued functions of one or more complex variables, motivated by signal processing, "the lifting schemes," and "lifting algorithms." Multibands suggest higher order matrix functions which offer their own challenges. Sample result: Under suitable restrictions, in the case of polynomial entries, these matrix functions factor into finite products of alternating upper and lower diagonal matrix functions. Pioneering ideas are from engineering (designs for building filters), but they they are of interest in pure mathematics as well. One of our motivations here is the desire to extend and refine existing methods (for the case of two bands) to the case of multiple bands. In the simplest case, by this we mean that signals are viewed as time function (discrete time) and each time-function generating a frequency response function (generating function) of a complex variable. In many applications it is possible to encode time-signals or their generating functions as vectors in a Hilbert space H. And to do this in such a way that a finite selection of frequency bands will then correspond to a system of closed subspaces in H. (Received March 11, 2014)