1106-65-1137 **Palle Jorgensen***, Palle Jorgensen, math, University of Iowa, Iowa City, IA 52242.
*Multiresolutions.*

Multi-scale analyses and multiresolutions in multivariate signal analysis offer fast algorithms which also have strong localization properties. The latter feature makes them useful as wavelet algorithms as well; i.e., for building recursive basis constructions from lter banks and multi-resolutions in Hilbert spaces, yielding much better pointwise approximation properties than traditional Fourier bases. In the talk we present a new approach to subdivision of signals into frequency bands, applicable to modern-day wireless transmission. We present a representation theoretic framework for perfect reconstruction lter-banks: via a representation theory create the Hilbert spaces $H$, and subspaces in $H$, in such a way that "non-overlapping frequency bands" correspond to orthogonal subspaces in H; or equivalently to systems of orthogonal projections. Different frequency bands must exhaust the signals for the entire system, the orthogonal projections add to the identity operator in $H$. We select special families of commuting orthogonal projections in $H$ via an iteration of the initial generators and repeated subdivision sequences. (Received September 11, 2014)