1098-41-41 **Palle E Jorgensen*** (palle-jorgensen@uiowa.edu), MLH 14, Dept of Matheamtics, University of Iowa, Iowa City, IA 52242. *Harmonic analysis of non-overlapping frequency bands and representations.*

We study subdivision of analogue-signals into frequency bands in signal/image-processing. Motivated by applications to digital filters we suggest a new representation theoretic framework. We build particular representations creating both Hilbert space H and algebra representing digital subdivisions. This leads to a filtered system of closed subspaces in H such that "non-overlapping frequency bands" correspond to orthogonal subspaces in H; or equivalently to systems of orthogonal projections. Since the different frequency bands must exhaust the signals for the entire system, one looks for orthogonal projections which add to the identity operator in H. Since time/frequency analysis is non-commutative, one is further faced with a selection of special families of commuting orthogonal projections. From this and repeated subdivision sequences we generate recursive algorithms for new bases and frames including wavelet families. (Received December 24, 2013)