1116-41-2907 **Palle E. T. Jorgensen*** (palle-jorgensen@uiowa.edu), Dept Math MLH, University of Iowa, Iowa City, IA 52242. *Operators and classification in sub-band filtering.*

We study systems of non-commuting operators arising in sub-band filters; and we give an account of new results on use of representations of the Cuntz relations O_N(a particular systems of non-commuting operators) in a class of filter problems (including the study of fractals, and geometric measure theory). This versatility is not surprising since Cuntz algebras are infinite algebras on a finite number of generators, and defined from certain relations. By their nature, these representations reflect intrinsic selfsimilar inherent in the problem at hand; and thus they serve ideally to encode iterated function systems (IFSs), their dynamics, and their measures. At the same time, the O_N -representations offer a new harmonic analysis of signals. Even though the Cuntz algebras initially entered into the study of operator-algebras and physics, in recent years these same Cuntz algebras, and their representation, have found increasing use in applied problems, such as wavelets, fractals, and signals. (Received September 23, 2015)