1019-47-11 **Palle E. T. Jorgensen*** (jorgen@math.uiowa.edu), Dept of Math, MLH, University of Iowa, Iowa City, IA 52242. *Uses of multivariable operator theory in recursive algorithms.*

In my recent work, much of it joint with Dorin Dutkay, I have made use of a recurrent theme from multi-variable operator theory in some applied problems from wavelets, and from the theory of fractals. While the theme began with some of my earlier research [some of it joint with Bratteli and Dutkay] on certain classes of representations of the Cuntz relations, our methods have now been refined to much wider families of operators. But the fundamental idea is the analyze recursive operator systems built on a generators and relations. Each of the generalizations allows new refined applications to for example wavelet like basis constructions. In the study of fractals, we also [work with Dutkay] find wavelet bases, so called gap-filling wavelets. The talk will present new results, and will highlight some of these developments. We will also draw parallels to ideas from signal and image processing. (Received June 16, 2006)