1014-42-24 **Palle E. T. Jorgensen*** (jorgen@math.uiowa.edu), Dept of Math, MLH, University of Iowa, Iowa City, IA 52242, and **Dorin E. Dutkay**, Department of Mathematics, Rutgers University (ddutkay@math.rutgers.edu). *Use of geometry and operator algebra theory in the computation of wavelet coefficients.*

We use Hilbert space geometry and operator theory in the calculation of wavelet coefficients with iterative and fast matrix-multiplication algorithms (joint work with L. Baggett, K. Merrill, and J. Packer.) This applies even to computations with singular and matrix-valued wavelet filters. Operator theory is used in creating the iterative algorithms. Wavelets and images: Start in a fixed resolution subspace in $L^2(R^n)$, realize it as an l^2 space, and then do wavelet expansions without integrating over R^n. The trick is to use matrix iterations of certain slanted matrices. Recall that digital images are created with the matrix iteration. Computers can't integrate! These iterative algorithms are in fact representations of Cuntz (or Cuntz like) relations. The modification needed for singular filters used in fractals, wavelet sets, and in other images is that the slanted matrices become infinite, but this can be addressed with threshold schemes for truncating the infinite. (Received May 24, 2005)