Wavelets, Self-Similarity, and the Joint Spectral Radius: A Retrospective

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Three decades ago, the "Wavelet Revolution" unexpectedly brought us the construction wavelet orthonormal bases generated by smooth functions. Central to these constructions is the theory of multiresolution analyses and the existence of refinable *scaling functions*, whose graphs exhibit a certain type of Self-similarity. In this talk we will examine wavelets, refinablity, and self-similarity from the point of view of the *joint spectral radius* of families of matrices, following the work of Cabrelli and Molter over time in the development of generalized self-similarity, multiwavelets, and multiwavelets in higher dimensions.