

1096-Q1-2652      **David W. Roach\*** ([droach@murraystate.edu](mailto:droach@murraystate.edu)), Faculty Hall 6C-17, Murray State University,  
Murray, KY 42071. *Orthogonal Parameterized Wavelets in Undergraduate Research.*

In this talk, a simple parameterization of the entire class of one-dimensional orthogonal wavelets with dilation factor 2 will be presented. The construction of this parameterization is accessible to undergraduates from a theoretical perspective. Moreover, the parameterization itself allows for the exploration of various properties such as approximation properties or frequency response. The various parameterized wavelets can be compared with one another in an image compression scheme and a search can be made for the best orthogonal wavelet for a particular image through steepest descent and gradient search techniques. The necessity to search a multi-parameter space that is complex in structure allows the undergraduate student to implement robust programming algorithms such as simulated annealing or genetic algorithms. (Received September 17, 2013)