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Tests for Wavelets as a Basis Set[1] THOMAS BAKER, Department of Physics Astronomy, University of California, Irvine, CA 92697, GLEN EVENBLY, Institute for Quantum Information and Matter, California Institute of Technology, Pasadena CA 91125, USA, STEVEN WHITE, Department of Physics & Astronomy, University of California, Irvine, CA 92697 — A wavelet transformation is a special type of filter usually reserved for image processing and other applications. We develop metrics to evaluate wavelets for general problems on test one-dimensional systems. The goal is to eventually use a wavelet basis in electronic structure calculations. We compare a variety of orthogonal wavelets such as coiflets, symlets, and daubechies wavelets. We also evaluate a new type of orthogonal wavelet with dilation factor three which is both symmetric and compact in real space.

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