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**JOSHUA MACARTHUR**, Dalhousie University

*Wavelets with Crystal Symmetry Shifts*

We introduce and explore the concept of wavelets when the lattice of shifts is replaced by a discrete group of measure preserving affine transformations of Euclidean space. This allows for all crystal symmetry groups to play the role of shifts, even the nonsymmorphic groups which cannot be handled with the existing theory of wavelets with composite dilations. Of particular importance to such Haar-type wavelets are their associated self-affine tiling set and the enumeration of the collection of shifts that yield convergence of the Barnsley-like iterated function system to said prototile(s) for all families of admissible dilations. Two dimensional examples will be presented. Joint work with Keith F Taylor.