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Orthonormal Dilations of Parseval Wavelets.

This is a report on our joint work with D.Dutkay, D.Han and Q.Sun. We prove that any Parseval wavelet frame is the projection of an orthonormal wavelet basis for a representation of the Baumslag-Solitar group $BS(1,2)$. We give a precise description of this representation in some special cases and show that for wavelet sets the representation is related to symbolic dynamics. The structure of the representation is revealed by the analysis of certain finite orbits for the associated symbolic dynamics. We give concrete examples of Parseval wavelets for which we compute the orthonormal dilations in detail; we construct Parseval wavelet sets which have infinitely many non-isomorphic orthonormal dilations. (Received August 05, 2008)