1012-42-134 **Edward N. Wilson*** (enwilson@math.wustl.edu), Department of Mathematics, Campus Box 1146, Washington University in St. Louis, One Brookings Drive, St. Louis, MO 63130, and **Kanghui Guo**, **Demetrio Labate**, **Wang Q Lim** and **Guido L. Weiss**. $\mathrm{BZ^n}$ Invariant Spaces.

Let B be a countable subgroup of the group of $n \times n$ matrices with integer entries and determinant of modulus one. Then the semi-direct product BZ^n acts unitarily on $L^2(R^n)$ by $\pi(b,k)f(x) = f(b^{-1}x - k)$ and a BZ^n invariant space is a closed π-invariant subspace. B is admissible if there exists a countable set $\{\phi_i : i \in \mathbb{N}\}$ such that $\{\pi(b,k)\phi_i : (b,k) \in BZ^n, i \in \mathbb{N}\}$ is a Parseval frame for $L^2(R^n)$. If the right action of B on $\hat{R}^n$ admits a measureable cross section for B-orbits, B is admissible and it's likely that this sufficient condition is also necessary. In the same way that ordinary wavelet theory rests on the properties of Z^n-invariant spaces, the theory of AB composite wavelets rests on the properties of BZ^n invariant spaces; to a remarkable extent, standard shift invariant space theorems and constructions have close BZ^n analogs. For example, in the case when A consists of powers of a single integer matrix a normalizing B, $|deta|\,\#(B/(aBa^{-1}) - 1$ is the number of generators for every AB orthonormal wavelet system. (Received September 16, 2005)