

1102-43-137

Bradley Currey, Azita Mayeli and Vignon Oussa* (voussa@bridgew.edu), Bridgewater, MA 02909. *Decomposition of Wavelet Representations.*

The concepts of wavelet sets were used by Lim, Packer and Taylor to obtain a direct integral decomposition of the wavelet representation of a discrete group associated to an arbitrary integer dilation matrix. The discrete group considered is the semi-direct product group : $\mathbb{Q}_A \rtimes \langle A \rangle$ where \mathbb{Q}_A is a subgroup of \mathbb{Q}^d . In this talk, we will present decompositions of wavelet representations when it is not assumed that the normal subgroup of the semidirect product group is commutative. More precisely, let N be a simply connected connected nilpotent Lie group with a rational structure. Let Γ be a uniform subgroup of N and let $\alpha \in \text{Aut}(N)$. We will obtain a decomposition of the so called wavelet representation $W : \cup_{k \in \mathbb{Z}} \alpha^k(\Gamma) \rtimes \langle \alpha \rangle \rightarrow U(L^2(N))$ defined such that $W(\gamma, 1)$ acts by left translation and $W(1, \alpha)$ acts by dilation on $L^2(N)$. This is a joint work with Bradley Currey and Azita Mayeli. (Received July 27, 2014)