

Title: *Images of Wavelet Transforms*

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Abstract: The natural representation of the shearlet group G_s on $L^2(\mathbb{R}^2)$ is the direct sum of two irreducible square-integrable representations, π_+ and π_- , of G_s acting on subspaces, \mathcal{H}_+ and \mathcal{H}_- , respectively, of $L^2(\mathbb{R}^2)$. For a vector $\eta \in \mathcal{H}_+$, define

$$V_\eta f(x) = \langle f, \pi_+(x)\eta \rangle,$$

for all $x \in G_s, f \in \mathcal{H}_+$. Then $V_\eta f \in C_b(G_s)$, for each $f \in \mathcal{H}_+$. We will call η a *wavelet for π_+* if V_η maps \mathcal{H}_+ isometrically into $L^2(G_s)$. This definition actually works for any locally compact group G and any unitary representation π of G . A representation is called admissible if it has a wavelet and a group is called admissible if it has an admissible representation. After formulating the definitions, we will present some recent results on how the image of V_η varies inside $L^2(G)$ as the wavelet η changes.