983-42-722 **Christopher Heil** (`heil@math.gatech.edu`), School of Mathematics, Georgia Institute of Technology, Atlanta, GA 30332-0160, and **Gitta Kutyniok*** (`gittak@uni-paderborn.de`), Dept. of Mathematics and Computer Science, University of Paderborn, 33095 Paderborn, Germany. *Density of Weighted Wavelet Frames.*

If $\psi \in L^2(\mathbb{R})$, Λ is a discrete subset of the affine group $\mathbf{A} = \mathbb{R}^+ \times \mathbb{R}$, and $w : \Lambda \to \mathbb{R}^+$ is a weight function, then the weighted wavelet system generated by ψ, Λ, and w is $\mathcal{W}(\psi, \Lambda, w) = \{w(a,b)^{1/2}\, a^{-1/2} \psi(\frac{x}{a} - b) : (a,b) \in \Lambda\}$. In this paper we define lower and upper weighted densities $\mathcal{D}_w^-(\Lambda)$ and $\mathcal{D}_w^+(\Lambda)$ of Λ with respect to the geometry of the affine group, and prove that there exist necessary conditions on a weighted wavelet system in order that it possesses frame bounds. We apply these results to oversampled affine systems (which include the classical affine and the quasi-affine systems as special cases), to co-affine wavelet systems, and to systems consisting only of dilations, obtaining some new results relating density to the frame properties of these systems. (Received September 23, 2002)

1