1056-42-819 **Jean-Pierre Gabardo*** (gabardo@mcmaster.ca), Department of Mathematics & Statistics, 1280, Main Street West, Hamilton, Ontario L8S 4K1, Canada. *Irregular Gabor tight frames associated with rough windows.* Preliminary report.

The problem of constructing Parseval frames for $L^2(\mathbb{R}^n)$ of the form

$$\{\sqrt{c(x,\nu)}\, e^{2\pi i t\nu}\, g(t-x)\}_{(x,\nu)\in\Lambda},$$

where $g \in L^2(\mathbb{R}^n)$ with $\|g\|_2 = 1$, Λ is a discrete subset of the time-frequency space $\mathbb{R}^{2n}$ and $c(x,\nu) > 0$ for $(x,\nu) \in \Lambda$, leads naturally to the question of finding discrete positive measures μ on $\mathbb{R}^{2n}$ satisfying the identity

$$\int_{\mathbb{R}^{2n}} |V_g f(x,\nu)|^2 \, d\mu(x,\nu) = \|f\|_2^2, \quad f \in L^2(\mathbb{R}^n),$$

where V_g denotes the short-time Fourier transform with window g. When g is a function in the Schwartz class $\mathcal{S}(\mathbb{R}^n)$, a recent result of the author shows that the isometric embedding above is equivalent to the identity $\mathcal{F}^S(\mu)\, V_g g = \delta_{(0,0)}$, where $\mathcal{F}^S(\mu)$ denote the symplectic Fourier transform of μ. The focus of this talk will be to provide an alternative to this formula when g is an arbitrary window in $L^2(\mathbb{R}^n)$ (in which case the distributional product in the previous formula no longer makes sense) and to discuss some of its consequences. (Received September 17, 2009)