1107-42-214 **Jean-Pierre Gabardo*** (gabardo@mcmaster.ca) and **Chun-Kit Lai** (cklai@sfsu.edu).
Frames of exponentials on small sets. Preliminary report.

If $x_1, \ldots, x_m$ are finitely many points in $\mathbb{R}^d$, let $E_\epsilon = \cup_{i=1}^m x_i + B_\epsilon$, where $B_\epsilon = \{x \in \mathbb{R}^d,\ |x| \leq \epsilon\}$. and let $\hat{f}$ denote the Fourier transform of f. Given a positive Borel measure μ on $\mathbb{R}^d$, we provide a necessary and sufficient condition for the inequalities

$$A\,\|f\|_2^2 \leq \int_{\mathbb{R}^d} |\hat{f}(\xi)|^2\, d\mu(\xi) \leq B\,\|f\|_2^2, \quad f \in L^2(E_\epsilon),$$

to hold for some $A, B > 0$ and for some $\epsilon > 0$ sufficiently small. If G is a (possibly dense) subgroup of $\mathbb{R}$, we characterize those measures μ for which the inequalities above hold whenever $x_1, \ldots, x_m$ are finitely many points in G (with ϵ depending on those points, but not A or B). We also point out an interesting connection between this problem and the notion of well-distributed sequence. (Received January 15, 2015)