1137-42-68 **Chun-Kit Lai***, 1600 Holloway Ave, San Francisco, CA 94132, and **Azita Mayeli**.

Fuglede-Gabor problem over non-separable time-frequency lattices.

Let $K \subset \mathbb{R}^d$ be a set with positive and finite Lebesgue measure. Let $\Lambda = M(\mathbb{Z}^{2d})$ be a lattice in $\mathbb{R}^{2d}$ with density $\text{dens}(\Lambda) = 1$. We show that if M is any lower block triangular matrix with diagonal matrices A and B, we prove that if $\mathcal{G}(|K|^{-1/2}\chi_K, \Lambda)$ is an orthonormal basis, then K can be written as a finite union of fundamental domains of $A(\mathbb{Z}^d)$ and at the same time, as a finite union of fundamental domains of $B^{-t}(\mathbb{Z}^d)$. If A^tB is an integer matrix, then there is only one common fundamental domain, which means K tiles by a lattice and is spectral. However, surprisingly, we will also illustrate by an example that a union of more than one fundamental domains is also possible. Nonetheless, this set is still a tile and a spectral set. (Received January 24, 2018)