

1135-37-2250

Rodrigo Treviño* (rodrigo@math.umd.edu) and **Scott Schmieding** (schmiedi@math.northwestern.edu). *Graph iterated function systems, Bratteli diagrams, and random substitution tilings of \mathbb{R}^d .*

We study tilings obtained by performing random substitutions. These tilings can be seen as given by graph iterated function systems obtained by extending the blowup construction of M. Barnsley and A. Vince. We use Bratteli diagrams to organize the hierarchical structure of the tilings and introduce renormalization dynamics through the shift of the Bratteli diagrams. The Lyapunov spectrum of the induced cocycle on the cohomology bundle then controls the behavior of ergodic averages of the \mathbb{R}^d action on the tiling space. The associated invariant distributions help explain questions physical nature such as behavior of diffraction measures as well as the spectral properties of Schrodinger operators associated to these tilings. This generalizes several works focused on self-similar tilings as this can be seen as a non-stationary version of those tilings. (Received September 25, 2017)