

HARMONIC AND SPECTRAL ANALYSIS

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Translational tilings in lattices

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(joint work with TERENCE TAO)

Let F be a finite subset of \mathbb{Z}^d . We say that F is a *translational tile* of \mathbb{Z}^d if it is possible to cover \mathbb{Z}^d by translates of F without any overlaps. The well-known periodic tiling conjecture suggests that any translational tile admits at least one periodic tiling. In the talk, we will motivate and discuss the study of this conjecture. We will also present some new results, joint with Terence Tao, on the structure of translational tilings in lattices and introduce some applications.