

Title: The structure of translational tilings

Abstract: Given one or more subsets (or "tiles") of an additive group, is it possible to tile that group by translates of these subsets? And what can one say about the structure of these tilings? Even for one or two tiles in a discrete group such as \mathbb{Z}^d , these questions can be remarkably subtle: some tile sets necessarily force their tilings to have some periodic structure, other tile sets can only be tiled aperiodically, and for some tile sets the question of whether one can tile at all is undecidable. We survey some open questions and recent progress on the structure of translational tilings in this talk.