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Tiling Abelian groups with a single tile and its connection to the ergodic theory of infinite measure preserving transformations

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Abstract

Suppose G is an infinite Abelian group that factorizes as the direct sum $G = A \oplus B$. When A is a finite tile, Sands asked when another set C could tile G with the same tile set B. One approach to this question uses the work Eigen, Hajian, Ito on exhaustive weakly wandering sets for ergodic infinite measure preserving transformations to answer Sandss question as well as provide extensions of Sandss question when A is not a finite tile.