

## **Multi-tiling and equidecomposability of polytopes by lattice translates**

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We characterize the polytopes in Euclidean spaces which multi-tile the space by translations along a given lattice. We also give a necessary and sufficient condition for two polytopes in Euclidean spaces to be equi-decomposable by lattice translations. To formulate this characterization, we introduce additive invariants on polytopes over lattices. The study of different additive invariants is a classical subject, which goes back to Hilbert's third problem. This is joint work with Nir Lev.