

LATTICES WITH AND WITHOUT SPECTRAL GAP

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The existence of a spectral gap for a group action on a probability space is a strong version of ergodicity appearing in various problems. A lattice Γ in a locally compact group G is said to have a spectral gap if the action of G on the homogeneous space G/Γ has a spectral gap. This is the case for a real Lie group G ; this is also the case when G is a simple algebraic group over a local field. However, when G is the automorphism group of a k -regular tree for $k \geq 3$, there are lattices in G without spectral gap.