

On a problem of Ellis and Pestov's conjecture

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The problems of Ellis comes purely from topological dynamics, asking whether the greatest ambit of a topological group is isomorphic to the Ellis enveloping semigroup of its universal minimal flow. It was answered in the negative for the discrete group of integers by Glasner ([1]) and for the group of order preserving automorphisms of the rationals by Pestov ([2]) with use of Ramsey theory. Extremely amenable groups, that is, groups with trivial universal minimal flows form a rich class of counterexamples to Ellis' problem. Pestov conjectured that a positive answer holds only for precompact groups, that is, subgroups of compact groups. For precompact groups the greatest ambit and the universal minimal flow coincide. We confirm this conjecture for S_∞ , the group of permutations of a countable set, and relate that to Ramsey theory and algebra on ultrafilters.

- [1] E. Glasner, *On minimal actions of polish groups*, *Topology and its Applications* **85** (1998), no. 1, 119–125
- [2] V. Pestov, *On free actions, minimal flows, and a problem by Ellis*, *The Transactions of the American Mathematical Society* **350** (1998), no. 10, 4149–4165

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