UNIQUE AMENABILITY OF TOPOLOGICAL GROUPS

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A topological group is uniquely amenable if every ambit admits exactly one invariant probability measure. An ambit is a dymanical system that contains a dense orbit. A topological group is precompact if finitely many translates of every open neighbourhood of the identity cover the whole group. Megrelishvilli, Pestov and Uspenskij asked whether every uniquely amenable group is precompact. We describe the universal ambit via near ultrafilters and use this viewpoint to enlarge the pool of groups for which the question has a positive question (e.g. groups of automorphisms of structures or groups of isometries of homogeneous metric spaces of regular density).