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Invariant measures, monothilable groups and orbit equivalence

The set of invariant probability measures of a continuous action of an amenable group on a compact metric space is a (non empty) metrizable Choquet simplex. A natural question is to know if the converse is true, i.e, if given a metrizable Choquet simplex K and an amenable group G , it is possible to realize K as the set of invariant probability measures of a continuous action of G on a compact metric space. In 1991, Downarowicz answered for the first time this question in the case $G = \mathbb{Z}$, showing that every metrizable Choquet simplex can be realized as the set of invariant probability measures of a Toeplitz \mathbb{Z} -subshift. In this talk we show the extension of this result to any amenable residually finite group (C, Petite 2014) and to some larger class of monothilable groups (Cecchi, C.). We will also explain the connection of this result with problems related to topological orbit equivalence.