

Choquet simplices as spaces of invariant probability measures of minimal homeomorphisms on manifolds

Dominik Kwietniak

Jagiellonian University in Krakow

dominik.kwietniak@uj.edu.pl

Many examples illustrating the limitations of the dynamical systems theory are defined on quite exotic spaces. We also know that the geometry of one-dimensional manifolds severely restricts available dynamics. On the other hand, physically relevant models of real-life phenomena result in smooth dynamical systems acting on manifolds. These observations are behind one of the most intriguing questions in the dynamical systems theory: given a property P that a dynamical system may or may not have, and a family C of dynamical systems decide whether a system exhibiting P exists in C . A very famous instance of that question is the smooth realisation problem. It asks if every measure preserving system isomorphic to a system given by a smooth diffeomorphism of a compact manifold preserving a measure equivalent to the volume element. The question is inspired by a brief remark made in 1932 by Johnny von Neumann in his foundational paper on ergodic theory and remains unresolved.

During my talk, I will discuss the recent progress on the following variant of the realisation problem: which nonempty Choquet simplices can be realised as simplices of invariant measures for minimal homeomorphisms on manifolds.

(joint work with Sejal Babel, Jernej Činč, Till Hauser, Piotr Oprocha)