
DAVE MCCLENDON, University of Maryland

Orbit discontinuities of Borel semiflows on Polish spaces

Let X be a standard Polish space. Given an action T_t of $[0, \infty)$ by (presumably non-invertible) Borel maps on X , we say that two distinct points x and y are “instantaneously discontinuously identified” (IDI) if $T_t(x) = T_t(y)$ for all $t > 0$. Such phenomena is an obstacle to representing the action as a shift map on a space of continuous paths. We define the concept of “orbit discontinuity”, a generalization of IDI, and discuss results regarding the structure and prevalence of such behavior. In particular, the set of points which are IDI has measure zero with respect to any measure preserved by the semiflow and is invariant under Borel time changes.

This material is part of my Ph.D. research conducted under the direction of Dan Rudolph.