

Chaotic actions of topological semigroups

Stefan Siegmund

Technische Universität Dresden
Department of Mathematics & Center for Dynamics
01062 Dresden, Germany
`stefan.siegmund@tu-dresden.de`

Bob Devaney defines a dynamical system (generated by a map or a differential equation) to be chaotic if (a) it is topologically transitive, (b) if the periodic points are dense and (c) if it has sensitive dependence on initial conditions. We extend Devaney's notion of chaos to the context of continuous actions of topological semigroups. A well-known result of Banks et al. [1] shows that the condition (c) of being sensitive to initial conditions is redundant. We generalize this result to chaotic actions of topological semigroups [2]. This is joint work with Friedrich M. Schneider, Sebastian Kerckhoff and Mike Behrlich.

[1] Banks, J., Brooks, J., Cairns, G., Davis, G., Stacey, P., On Devaney's definition of chaos, *Am. Math. Mon.* 99 (1992), no. 4, 332–334.

[2] Schneider, F.M., Kerckhoff, S., Behrlich, M., Siegmund, S., Chaotic actions of topological semigroups, *Semigroup Forum* 87 (2013), 590–598.