Dissipative homeomorphisms of infinite surface: how the local behavior may impact the topology of attractors

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Abstract

A class of dissipative orientation preserving homeomorphisms of the infinite annulus, pairs of pants, and generally infinite surface homeomorphic to a punctured sphere is considered. Several results in the literature have provided sufficient conditions to guarantee a simple structure of the attractor. In the opposite side, our result relates the local behavior of a dynamical system in fixed points with the complexity of the attractor. We prove that in some isotopy classes the existence of so-called inverse saddle, impacts the topology of the attractor - it cannot be arcwise connected. This is a joint work with Rafael Ortega and Alfonso Ruiz-Herrera.