

Newhouse phenomenon and uniformity of extremal bundles

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Abstract:

In the early 70's Newhouse has shown that there exists a set of diffeomorphisms, generic inside a C^2 open set, which exhibit infinitely many sinks or sources.

This phenomenon appears close to the set of diffeomorphisms having a homoclinic tangencies.

In a joint work with E. Pujals and M. Sambarino, we now provide a converse for the C^1 -topology: any C^1 -generic diffeomorphism which exhibits infinitely many sinks or sources can be approximated by a diffeomorphism with a homoclinic tangency.

The main step is to obtain a generalization in any dimension of the Mane-Pujals-Sambarino hyperbolicity theorem on the uniformity of one-dimensional extremal bundles for C^2 diffeomorphisms.