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Title:

On the existence of attractors for diffeomorphisms and flows.

Abstract: In the sixties and seventies, many people tried to give a notion of attractor allowing the hope that for most of dynamical system, most of the orbits would tend to an attractor. Then these reflections converged to the notion of "topological attractors" (for the topological studies) and SRB (or physical) measures (for the ergodical approach).

In a recent work with D. Yang and M. Li, we build several examples of Cr-generic (for every positive r) diffeomorphisms or flows without any topological attractors. The diffeomorphisms we build presents finitely many C1-robust "quasi attractors" (in the sense of Hurley) which attract every generic points in the manifold.

Then I will propose a new notion of attractors in the light of these new examples.

In the case of flows, some of these "qasi attractors " are "robustsingular-quasi-attractors" showing that the relationship between singularities and regular orbits

is much more open on manifold with dim M>3 than in dimension 3.

Finally, I will discuss the weak form of hyperbolcity satisfied by these attractors.