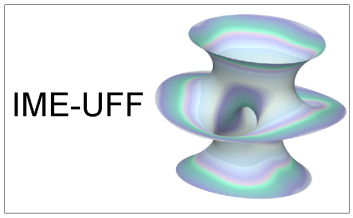

Seminário de Sistemas Dinâmicos da UFF

Finiteness and existence of attractors and repellers on sectional hyperbolic sets

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Local: Sala de Seminários - 7^o andar (Auditório da Pós-Graduação).

Resumo

We study small perturbations of a sectional hyperbolic sets of vector fields on compact higher dimensional manifolds. Particularly, the aim is to research two very important related problems, namely, how many attractors and repellers can arise from small perturbations and, also, the possible appearance of repellers from small perturbations. Motivations come from the previous result [1], [5], providing beside transitivity or nonwandering points, an upper bound in terms of the number of singularities in dimension three, its subsequently generalization to higher dimensions [4], and also the well-known examples of sectional hyperbolic sets containing repellers ([3] or [2]). Indeed, we remove both the transitivity and nonwandering hypotheses in order to obtain robust finiteness of attractors and repellers. Here, we obtain an upper bound for the number of attractors and repellers that can appear from small perturbations of vector field (this improves [4], [5]). Furthermore, we prove a robustly non-existence of repellers on a connected sectional hyperbolic set which both has singularities and consists of nonwandering points.

[1] Arbieto, A., Morales, C.A., Senos, L., On the sensitivity of sectional-Anosov flows, *Math. Z* 270 (2012), no. 1-2, 545–557.

[2] Carrasco, D., Chavez, M.E., An attracting singular-hyperbolic set containing a non trivial hyperbolic repeller,*Lobachevskii Journal of Mathematics*, **30** (2009), no.1, 12-16.

[3] Franks, J., Williams, B., Anomalous Anosov Flows, *Lecture Notes in Mathematics, Springer* (1980), Vol. 819, 158-174.

[4] Lopez, A., M., Sectional Anosov flows in higher dimensions, *http://arxiv.org/abs/1308.6597.*

[5] Morales, C., A., The explosion of singular-hyperbolic attractors, *Ergodic Theory Dynam. Systems* 24 (2004), no. 2, 577-591.