Topological aspects of the Hopf bifurcation for discrete dynamical systems

Héctor Barge
E.T.S. Ingenieros Informáticos,
Universidad Politécnica de Madrid, Madrid, Spain
h.barge@upm.es

José M.R. Sanjurjo
Facultad de C.C. Matemáticas,
Universidad Complutense de Madrid, Madrid, Spain
jose_sanjurjo@mat.ucm.es

Let $f_\lambda : M \longrightarrow M$ with $\lambda \in [0,1]$ be a parametrized family of homeomorphisms of a manifold M. We say that an attractor $K \subseteq M$ of f_0 undergoes a *Hopf bifurcation* at $\lambda = 0$ provided that K is a repeller for f_λ for every $\lambda > 0$. Whenever an attractor undergoes a Hopf bifurcation, there appears a family of attractors K_λ that converges to K upper semicontinously as $\lambda \to 0$. In this talk we shall see that in many interesting situations we can characterize the Borsuk homotopy type of these attractors. These results have been obtained in collaboration with J.M.R. Sanjurjo.