HAUSDORFF DIMENSION FOR NON-HYPERBOLIC
REPELLERS II: DA DIFFEOMORPHISMS

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ABSTRACT. We study non-hyperbolic repellers of diffeomorphisms derived from transitive Anosov diffeomorphisms with unstable dimension 2 through a Hopf bifurcation. Using some recent abstract results about non-uniformly expanding maps with holes, by ourselves and by Dysman, we show that the Hausdorff dimension and the limit capacity (box dimension) of the repeller are strictly less than the dimension of the ambient manifold.

1. **Introduction and Statement of Results.** In this paper we study the Hausdorff dimension of a class of non-hyperbolic repellers constructed by deformation of globally hyperbolic (Anosov) diffeomorphisms in dimension 3 or higher. A pattern we have in mind is described in Figure 1. A fixed point p of some Anosov diffeomor-
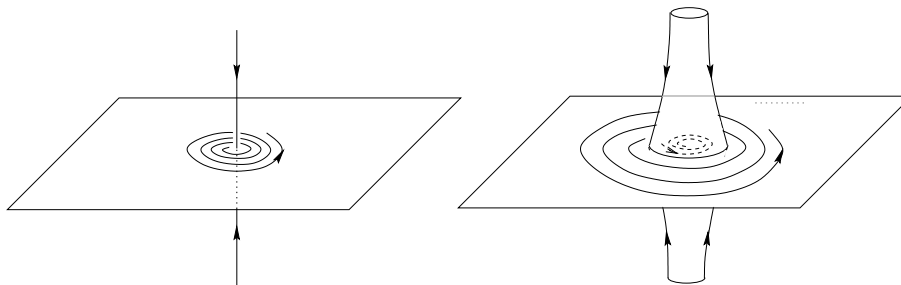

FIGURE 1. A Hopf bifurcation

phism goes through a Hopf bifurcation, and becomes an attractor. The complement Λ of the basin of attraction $W^s(p)$ is a repeller for the new diffeomorphism. *Does* Λ *have zero Lebesgue measure (volume)?* Even more, *is the Hausdorff dimension of the repeller strictly less than the dimension of the ambient manifold?*

Fractals invariants such as the Hausdorff dimension and limit capacity play an important role in various areas of Dynamical Systems, and have attracted a great deal of attention. We refer the reader to Falconer [8], Palis-Takens [15], Pesin [16] for an updated panorama of the theory. Computing these fractal invariants is usually difficult, because they depend on the microscopic structure of the set. Not