

Title. Bifurcations of homoclinic tangencies in area-preserving maps

Abstract.

We study bifurcations in area-preserving maps with homoclinic tangencies. We consider C^r -smooth maps ($r \geq 3$) having a saddle fixed point whose stable and unstable invariant manifolds have a quadratic or cubic tangency at the points of some homoclinic orbit and study bifurcations of periodic orbits near the homoclinic tangencies in closed area-preserving maps. In the case of a quadratic homoclinic tangency we prove the existence of cascades of generic elliptic periodic points for one and two parameter unfoldings. In the case of a cubic homoclinic tangency we establish the structure of bifurcation diagram in two parameter unfoldings.