1108-37-155   **Zhihong Jeff Xia** (`xia@math.northwestern.edu`) and **Pengfei Zhang***
(`pzhang@math.uh.edu`). *Homoclinic points for generic convex billiards.*

Kupka-Smale Theorem implies that, C^r-generically, each homoclinic orbit, if exists, is the transversal intersection of invariant manifolds. It is unknown that whether the homoclinic orbits exist C^r-generically. In this talk I will give a brief introduction of some recent progresses for surface diffeomorohisms, and describe the dynamical billiards on convex domains. Then we prove that C^r generically, there exists some homoclinic orbit for every hyperbolic periodic point of the billiard system. This is a joint work with Zhihong Jeff Xia. (Received January 08, 2015)