Transit Time in the Area-Preserving Hnon Maps[1] IBERE CAL-
DAS, VITOR OLIVEIRA, DAVID CIRO, University of Sao Paulo — Chaotic so-
lutions of unbounded area-preserving maps usually consist of an incoming regular
path, a transitory irregular motion and a regular exit path. In simple situations
the irregular motion occurs within a localized region of phase space and individual
orbits do not access the whole chaotic domain. During its irregular portion an orbit
spends a transient time wandering in a sub-region of the chaotic domain which is
determined by its income path. We show that, for the area-preserving Hnon map,
the transit time pattern is influenced by the distribution of intersections of invariant
manifolds in the chaotic domain. To corroborate this assertion, we use an adaptive
refinement procedure to obtain approximated sets of homoclinic and heteroclinic
intersections. As the control parameter increases stickiness gets reduced and both
homoclinic and heteroclinic sets have a similar distribution, indicating a transition
to a more uniform type of transitory chaotic motion.

Ibere Caldas
University of Sao Paulo

Date submitted: 31 Jul 2019   Electronic form version 1.4