1054-37-93   **Sheldon E. Newhouse*** (`newhouse@math.msu.edu`). *Verified Computation of Invariant Manifolds for Planar Diffeomorphisms.* Preliminary report.

We describe accurate and efficient methods for obtaining rigorous enclosures of long pieces of stable and unstable manifolds for hyperbolic periodic points in planar diffeomorphisms. This allows accurate computation of homoclinic points and their images. The methods involve the application of verified computation using differential algebraic techniques and associated computer software. In some cases such as those occuring in the standard Henon map $H(x, y) = (1 + y - 1.4 * x^2, 0.3 * x)$ disjoint tubular neighborhoods of width smaller than $1e - 4$ can be obtained for hundreds of pieces of stable curves, each of arclength at least 0.5.

Applications to the estimation of topological entropy for Henon maps will also be described.

This is joint work with A. Wittig, J. Grote, M. Berz, and K. Makino. (Received September 07, 2009)