Edge formation in low-dimensional models of shear transition
NORMAN LEBOVITZ, University of Chicago — Low dimensional models are used
to illustrate the nature of an edge state. In these models the edge is the stable
manifold of a lower-branch equilibrium point. It comes into existence in connection
with the birth of a periodic orbit via a homoclinic bifurcation as a parameter (the
Reynolds number) increases beyond a critical value. Even for values of the Reynolds
number less than this critical value, the structure of the basin boundary is such that
edge-like behavior occurs in parts of phase space. It is possible to manufacture dynamical systems for which the edge state disappears for sufficiently large parameter
values.

Norman Lebovitz
University of Chicago