

The most frequent employed example of non linear 2-dimensional map, the "E. Coli" of non linear dynamics s the Hénon map:

$$\begin{array}{rcl} x_{n+1} & = & 1 - ax_n^2 + by_n \\ y_{n+1} & = & x_n & \bullet \end{array}$$

sometimes written equivalently as the 2-step recurrence relation

$$x_{n+1} = 1 - a|x_n| + by_n$$
  
 $y_{n+1} = x_n$ 

The Lozi map is a linear tent map version of the Hénon map is given by

$$x_{n+1} = 1 - ax_n^2 + bx_{n-1}.$$

though not realistic as an approximation to a smooth flow, the Lozi map is a very helpful an entire tool for developing guess on the topology of a whole class of maps of the Hénon type, so called once-folding maps.

The Hénon map is the simplest map that captures the "stretch & fold" dynamics of return maps such as the Rösslers. The Hénon map dynamics is conveniently plotted in the  $(x_n, x_{n+1})$  plane cample is given in fig. 2.

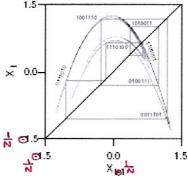


Fig. 2: The strange attractor (unstable manifold) and a period 7 cycle of the Hénon map a 1.4, b=0.3.

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