Henon-Heiles

A, B,C,D,E

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Outline

- :
- :
  Henon-Heiles.

Model Equations

Henon-Heiles

$$\frac{d}{dt}y_1 = y_2$$
$$\frac{d}{dt}y_2 = -y_1 - 2y_1y_3$$
$$\frac{d}{dt}y_3 = y_4$$
$$\frac{d}{dt}y_4 = -y_3 - y_1^2 + y_3^2$$

Analysis

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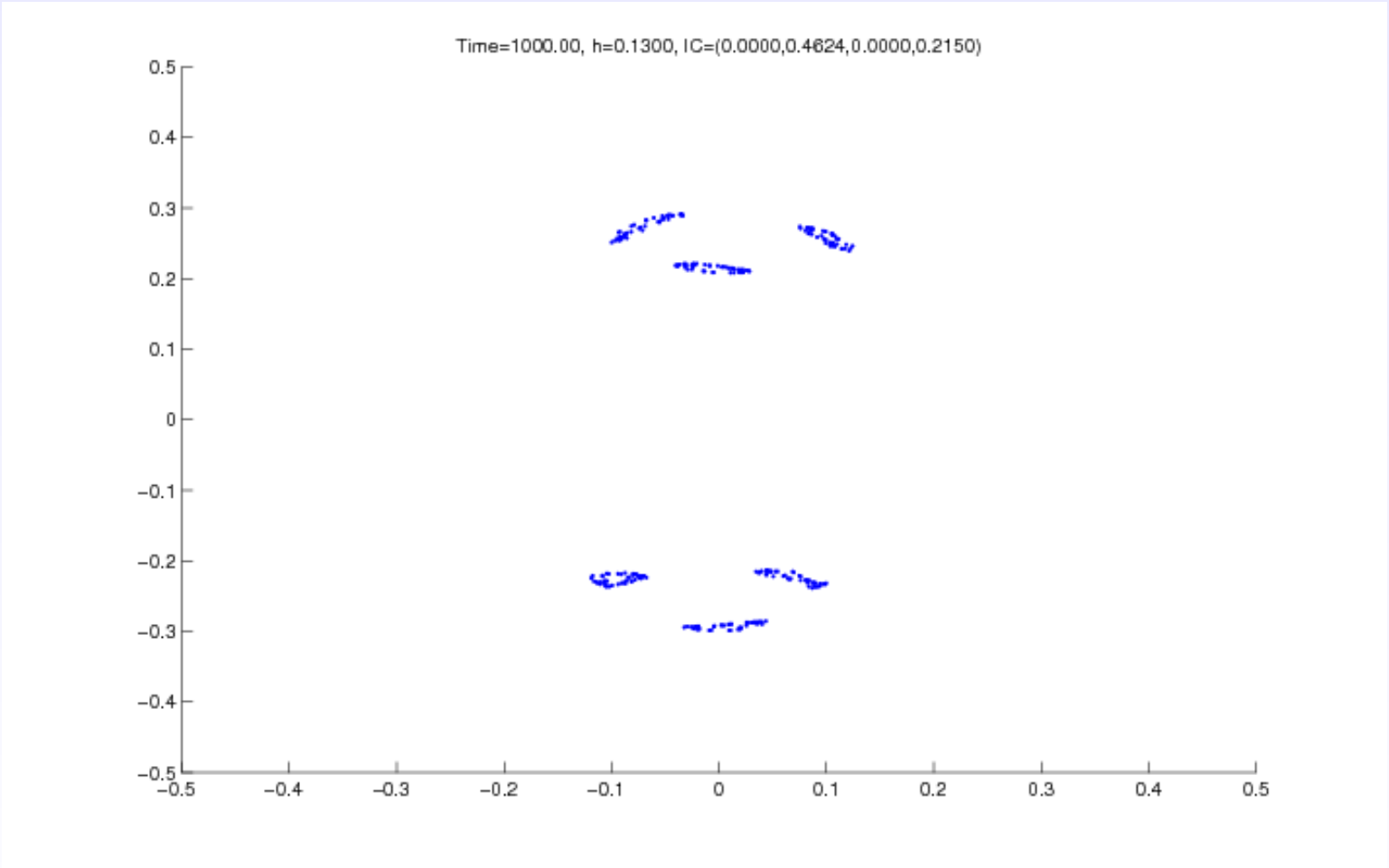
$$\frac{1}{2}(y_1^2 + y_2^2 + y_3^2 + y_4^2) + y_1^2 y_3 - \frac{1}{3} y_3^3 = h$$

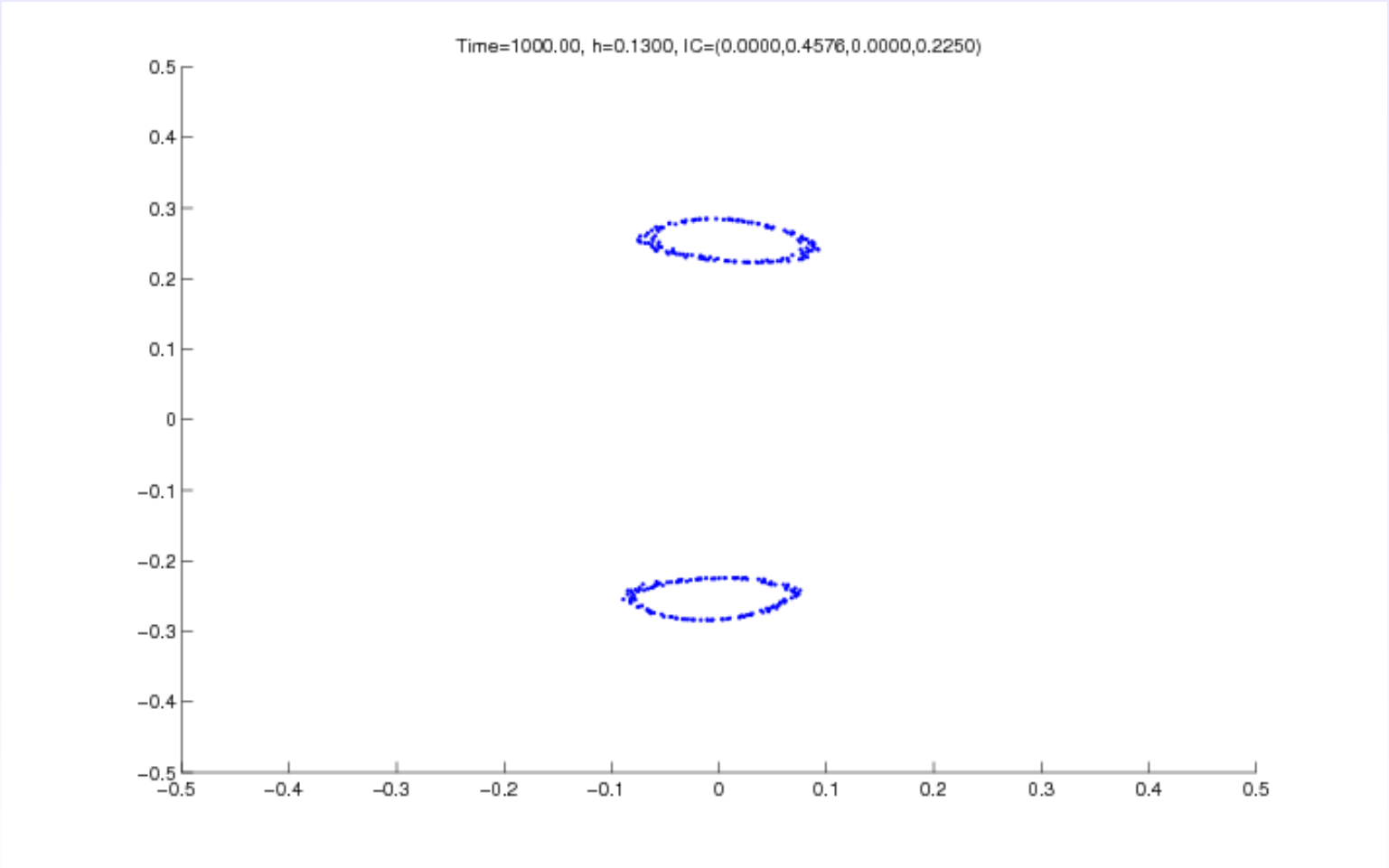
:

1. h, y_1,y_3,y_4, y_2.
2. ode45Henon-Heiles
3. Poincare sectionPoincare map

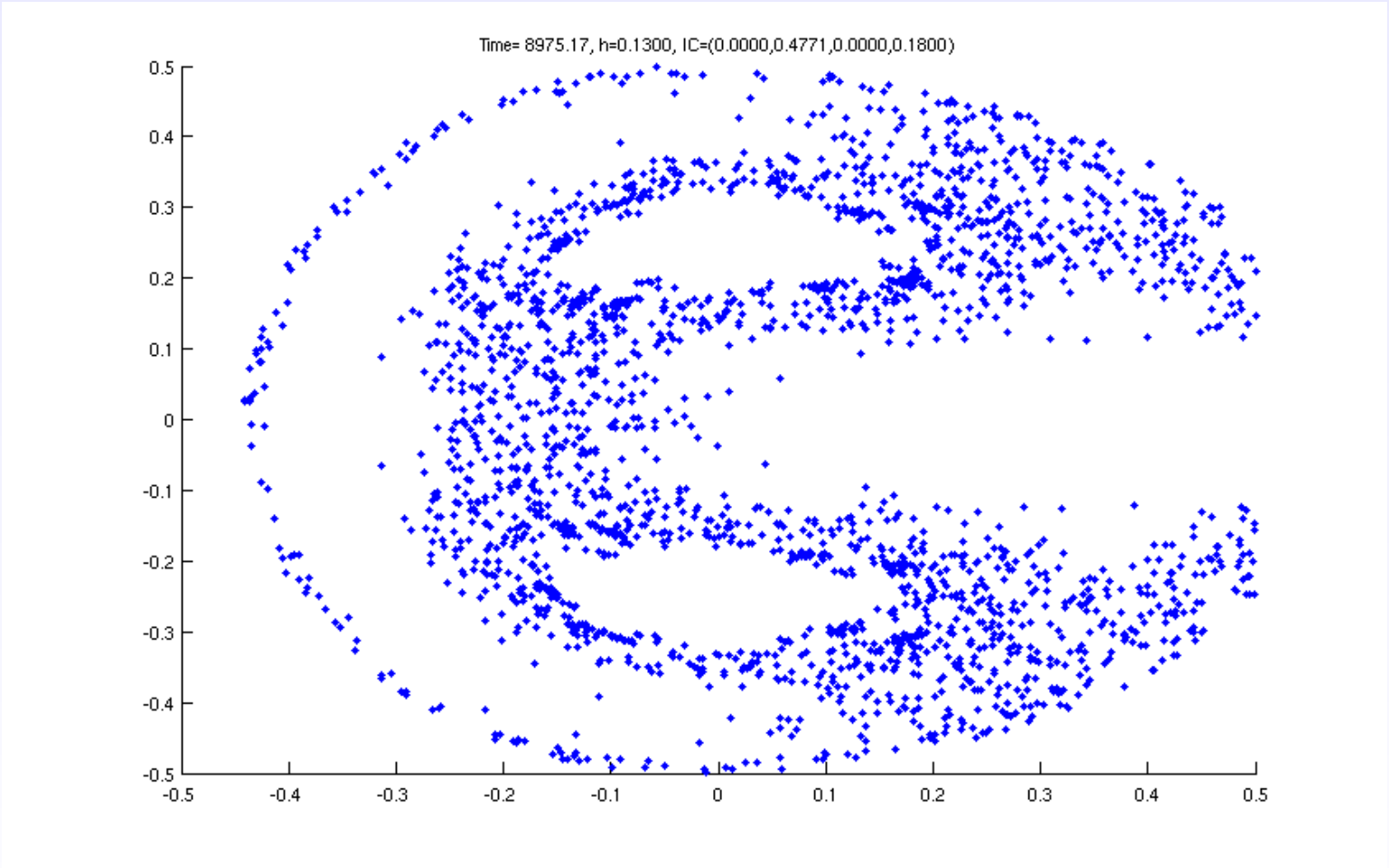
$h = 0.13,\ y_1 = y_3 = 0,\ y_4 = 0.215$



$h = 0.13,\ y_1 = y_3 = 0,\ y_4 = 0.225$



$h = 0.13,\ y_1 = y_3 = 0,\ y_4 = 0.18$



- :
  1.
- :
  - : A
  - : C
  - : D
  - : B, E

- Computer modeling: from sports to spaceflight ... from order to chaos. by Danby, J. M. A.