

Complex Network Dynamics:

Theory & Application

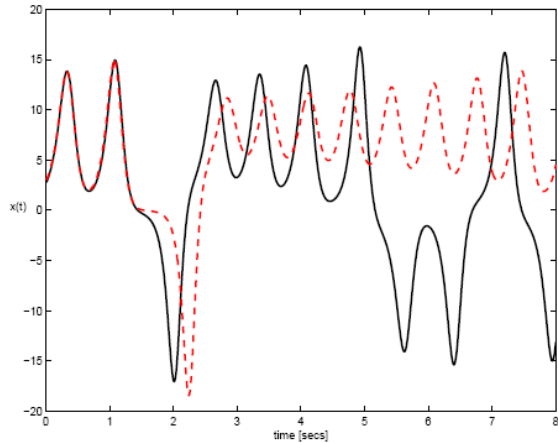
Yuri Maistrenko

E-mail: y.maistrenko@biomed.kiev.ua

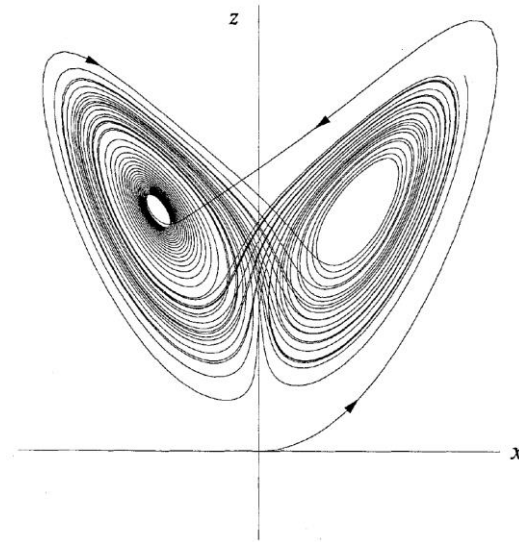
Lecture 12

LORENTZ ATTRACTOR (1963)

butterfly effect



a trajectory in the phase space



The **Lorenz attractor** is generated by a system of 3 differential equations

$$\dot{x} = \sigma(y - x)$$

$$\dot{y} = rx - y - xz$$

$$\dot{z} = xy - bz$$

$$\sigma = 10, r = 28, b = 8/3$$

Nonlinear Dynamics and Chaos - Lecture Course
Steven Strogatz, Cornell University
spring 2014

Lecture 15, from the beginning till 11 min., at:

https://www.youtube.com/watch?v=Hljv7Hf6Zo&list=PLbN57C5Zdl6j_qJA-pARJnKsmROzPnO9V&index=15

Lecture 16, from 23 min. to the end, at:

https://www.youtube.com/watch?v=U-bWDtbB4qY&index=16&list=PLbN57C5Zdl6j_qJA-pARJnKsmROzPnO9V

Lecture 17, from 22 min to the end, at:

https://www.youtube.com/watch?v=gscKcPAm-H0&index=17&list=PLbN57C5Zdl6j_qJA-pARJnKsmROzPnO9V