# HIRATA LAB.

## ［Revealing hidden patterns within time series data］

### Collaborative Research Center for Innovative Mathematical Modelling

http://www.sat.t.u-tokyo.ac.jp//~yoshito/

**Nonlinear Time Series Analysis**

Department of Mathematical Informatics, Graduate School of Information Science and Technology

# Nonlinear Time Series Analysis and Its Cross-disciplinary Applications

This laboratory develops methods for nonlinear time series analysis and applies the methods to real datasets of important problems including datasets obtained from brains, foreign exchange markets, cancers, earthquakes, weather, and renewable energy. Our current main focuses include (i) developing methods for analyzing point process data, where events are observed at irregular times, (ii) personalizing treatments of cancers, which hopefully improves the quality of life, and (iii) understanding high-dimensional time series in intuitive ways.
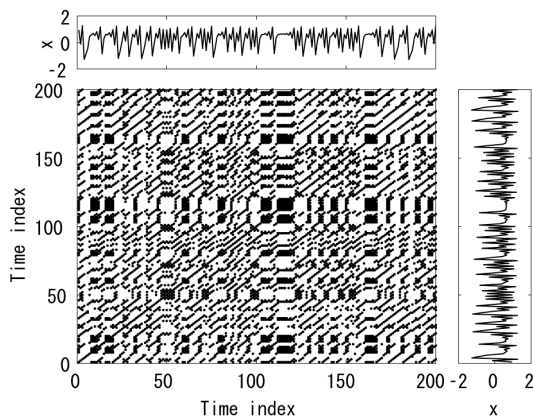


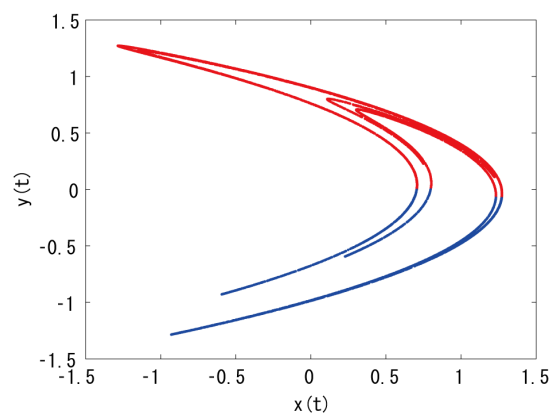Fig. 1 Recurrence plots for the Henon map.



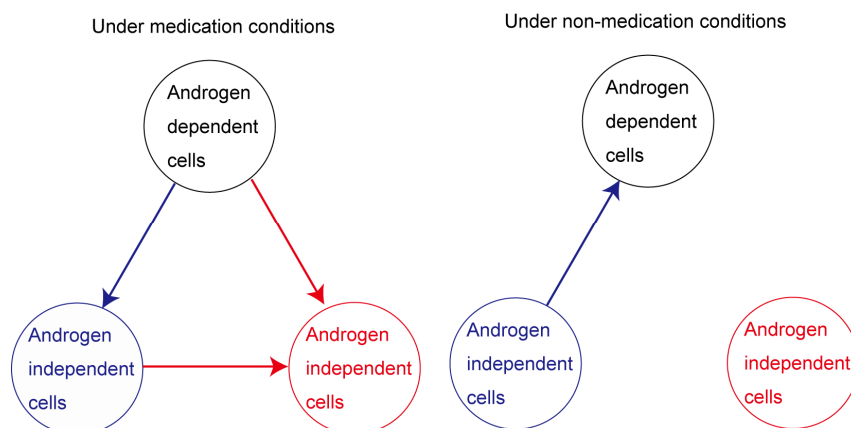Fig. 2 Generating partition for the Henon map.



Fig. 3 Schematic diagram for a mathematical model of prostate cancer under intermittent androgen suppression.