Henrik Jeldtoft Jensen 特任教授によるセミナー講演

講演者：Prof. Henrik J. Jensen (Imperial College London)
日時（1回目）：9月6日（水） 13:30-15:00
日時（2回目）：9月13日（水） 13:30-15:00
場所：東工大すずかけ台キャンパス G3 棟 2 階 220 号室

【1回目】
タイトル：The Shelling model of segregation and the Master Equation for the coarse grained dynamics
概要：Thomas Shelling introduced the model as an agent-based computer algorithm around 1970 to demonstrate that the collective behaviour of a population can be entirely different from what one will expect from a linear on-average extrapolation of the behaviour of the individuals. The model is difficult to handle analytically, but if one coarse grained and consider the densities of types instead of a description at the level of the individual agents, one can derive a Master Equation formalism of very general interest. This formalism allows an analytic discussion of the segregation behaviour.

【2回目】
タイトル：Forecasting transitions in high dimensional stochastic systems
概要：Complex many component systems often undergo effective stochastic dynamics which exhibit intermittent dynamics consisting of periods of relative calm separated by abrupt transitions, upheavals, or tipping points. As examples one may think of earthquakes, financial crashes, ecosystem breakdowns, etc. We will discuss a number of approaches to try to forecast the abrupt disruptive events. It has been suggested that an increase in fluctuations can allow the prediction of the time of transition. However, we will consider difficulties with this approach in terms of inaccuracy and false positives. Next, we will describe a procedure which combines data monitoring with a mean field approach to establish a quantity, Q, given by the overlap of the current state of the system with the most unstable direction of the mean field dynamics and we will discuss how in principle Q can be a high-fidelity predictor able to forecast at a good range.