概率论系列报告 Probability Seminar

报告题目(Title): **Cell size distribution of lineage data: analytic results and parameter inference**

报告人(Speaker): 贾晨 Chen Jia (北京计算科学研究中心 CSRC)

时间(Time): **2021/04/26 14:00-15:00**

地点(Venue): 理科一号楼 1114 Science Building No.1

摘要(Abstract):

Recent advances in single-cell technologies have enabled time-resolved measurements of the cell size over several cell cycles. These data encode information on how cells correct size aberrations so that they do not grow abnormally large or small. Here, we formulate a piecewise deterministic Markov model describing the evolution of the cell size over many generations, for all three cell size homeostasis strategies (timer, sizer, and adder). The model is solved to obtain an analytical expression for the non-Gaussian cell size distribution in a cell lineage; the theory is used to understand how the shape of the distribution is influenced by the parameters controlling the dynamics of the cell cycle and by the choice of cell tracking protocol. The theoretical cell size distribution is found to provide an excellent match to the experimental cell size distribution of E. coli lineage data collected under various growth conditions.

欢迎参加

Everyone is welcome.