Workshop on Branching Processes

时间：2023 年 3 月 28 日

地点：光华楼东主楼 1801

主办单位：复旦大学

主办人：Elie Aidekon（复旦大学）

报告人（按报告顺序排列）：

何　辉（北京师范大学）

李增沪（北京师范大学）

施　展（中国科学院）

陈昕昕（北京师范大学）

陈　娴（厦门大学）

报告题目：Brownian continuum random tree conditioned to be large

报 告 人：何辉

报告人所在单位：北京师范大学

报告日期：2023-03-28 星期二

报告时间：上午 9:00-10:00

报告地点：光华楼东主楼 1801

报告摘要：We consider a Feller diffusion conditioned on the size to be large, and we study the limit in distribution of the conditioned process and of its genealogical tree. The limiting process could be the standard size-biased process (and the associated genealogical tree is given by the Kesten's tree) or described by a SDE with a Poissonian immigration whose associated genealogical tree is constructed by an infinite discrete skeleton decorated with Brownian continuum random trees given by a Poisson point measure. The talk is based on a joint work with R. Abraham and J.-F. Delmas.

报告题目：Continuous-state branching processes in varying environments

报 告 人：李增沪

报告人所在单位：北京师范大学

报告日期：2023-03-28 星期二

报告时间：上午 10:20-11:20

报告地点：光华楼东主楼 1801

报告摘要：By the work of Bansaye and Simatos [EJP 2015], an inhomogeneous continuous-state branching process may arise as the scaling limit of a sequence of discrete-state branching processes in varying environments. A general class of such continuous-state processes was constructed in Fang and Li [AAOP 2022], where the so-called bottleneck behavior was clarified. The class essentially includes all possible limits of the discrete-state branching processes. The reasonable understanding of the models is the basis of the study of continuous-state branching processes in random environments. The exploration is also closely related to the Loewner theory of Bernstein functions, as pointed out by Gumenyuk et al. [arxiv: 2206.04753,2211.12442]. The talk outlines those recent progresses.

报告题目：The continuum Derrida-Retaux branching system

报 告 人：施展

报告人所在单位：中国科学院

报告日期：2023-03-28 星期二

报告时间：下午 2:00-3:00

报告地点：光华楼东主楼 1801

报告摘要：The continuum Derrida-Retaux branching system originates from a family of hierarchical renormalization models in statistical physics, and can be viewed as an exactly solvable growth-fragmentation process in the sense of Bertoin. I am going to make some elementary discussions on asymptotic properties of the system. Based on joint work with Bernard Derrida and Thomas Duquesne.

报告题目：Domain of attraction of fixed points for branching Brownian motion

报 告 人：陈昕昕

报告人所在单位：北京师范大学

报告日期：2023-03-28 星期二

报告时间：下午 3:00-4:00

报告地点：光华楼东主楼 1801

报告摘要：We consider one-dimensional branching Brownian motion (BBM) started from a point process. We introduce a suitable metric space of locally finite point measures on which we

- prove that BBM with critical drift is a well-defined Markov process which satisfies
- Feller property;
- characterize all invariant measures/fixed points;
- characterize the domain of attraction of each fixed point.

报告题目： Risk-sensitive average optimality for discrete-time Markov decision processes

报 告 人： 陈娴

报告人所在单位： 厦门大学

报告日期： 2023-03-28 星期二

报告时间： 下午 4:20-5:20

报告地点： 光华楼东主楼 1801

报告摘要： We study the risk-sensitive average optimality for discrete-time Markov decision processes with denumerable states and unbounded costs. We derive the multiplicative Poisson equation under the suitable ergodicity conditions via an approximation method. Moreover, we prove the existence of a unique solution to the risk-sensitive average cost optimality equation and give an equivalent characterization of the set of all optimal stationary policies. Finally, we present the policy iteration algorithm and show its convergence. This is a joint work with Qingda Wei.