

中国科学院

随机复杂结构与数据科学重点实验室

学术报告

题目: Large deviations for supercritical multi-type branching processes in random environments

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摘要: Consider a d -type supercritical branching process $\{Z_n^i = (Z_n^{i(1)}, \dots, Z_n^{i(d)}), n \geq 0\}$ in an independent and identically distributed random environment $\{\xi_n = (\xi_n^0, \xi_n^1, \dots)\}$, starting with one initial particle of type i , whose offspring distributions of generation n depend on the environment ξ_n at time n . I will present a result on the precise large deviations for the total population size $|Z_n|_1 = \sum_{j=1}^d Z_n^{(j)}$ of generation n . The proof is based on the Kesten-Stigum type theorem about the limit of the normalized population size $Z_n^{(j)}/E_{\xi_n} Z_n^{(j)}$ (where E_{ξ_n} denotes the conditional expectation given the environment ξ_n), the L^p convergence results of this sequence, and precise large deviations for the products of random matrices. The talk is based on a joint work with I. Grama and T. T. Nguyen.