概率论系列报告

报告题目(Title)：**Understanding the Fokker-Planck equations of neural networks based on an iteration perspective: justification and quantitative estimates**

报告人(Speaker)：Liu Jianguo (Duke University)

时间(Time)： 5 月 25 日(周一)上午 10:00-11:00

地点(Venue)：zoom 会议（ID：910 5005 8405）

摘要(Abstract)： In this talk, I will present some results on establishing a rigorous connection between the Fokker-Planck equation of neural networks with its microscopic model: the diffusion-jump stochastic process that captures the mean field behavior of collections of neurons in the integrate-and-fire model. The proof is based on a novel iteration scheme: with an auxiliary random variable counting the firing events, both the density function of the stochastic process and the solution of the PDE problem admit series representations, and thus the difficulty in verifying the link between the density function and the PDE solution in each sub problem has been greatly mitigated. The iteration approach provides a generic frame in integrating the probability approach with PDE techniques, with which we prove that the density function of the diffusion-jump stochastic process is indeed the classical solution of the Fokker-Planck equation with a unique flux-shift structure. This is a joint work with Ziheng Wang, Yuan Zhang, Zhennan Zhou of Peking University.

欢迎参加