

НАЦИОНАЛЕН СЕМИНАР ПО СТОХАСТИКА

секция „Изследване на операциите, вероятности и статистика“

Поредната сбирка на *Националния семинар по стохастика* ще се проведе на **6 февруари 2018 г.** (сряда) от **14:00** часа в зала **403** на ИМИ-БАН. Ще бъдат представени два доклада по 30 минути от

Alexander Klump (докторант в University of Paderborn):

"A specific N -particle system of Fleming-Viot Type: Recurrence-transience properties"

и

Matthias Liesenfeld (докторант в University of Paderborn):

"Hidden Markov Model Structure in some Fleming-Viot type particle system".

Abstract (A. Klump): We introduce a particle process of N individuals which perform Brownian motion in one or more dimensions up to an exponential time with rate λN . At this time the particle with the minimal fitness jumps on an uniformly chosen remaining particle, where fitness is measured by the function $s(x) = 1/\|x\|$. We can prove that the localisation of the jumps strongly counteracts the transient behaviour of the Brownian motion in the sense that the process is (neighbourhood-)positive-recurrent for all choices of parameters. On the other hand we propose a question of different cast. Namely, whether a propagation of chaos effect occurs, this is whether the empirical distribution $\sum_{i=1}^N \delta_{X_i}$ converges in distribution to a non-random measure. This would mean that for large N the particles become approximately independent.

Abstract (M. Liesenfeld): We consider a Fleming-Viot type particle system consisting of N independently moving particles on the positive real line. The underlying motions are Bessel processes with the same constant drift for all particles forcing them to reach the origin. When that occurs, this particle jumps uniformly distributed to one of the other positive ones and afterwards all N of them evolve independently again and the same mechanism is repeated. For large N , this particle system helps statisticians to efficiently simulate some conditioned stochastic processes. Yet, it is not clear whether the sequence of jumping times diverges or converges, that is, the Markov process explodes. In the later case the constructed particle system is well defined up to some finite time only. In our ongoing analysis, the process exhibits a Hidden Markov Model structure from which we hope to attain a deeper understanding of finiteness of the explosion time.

Поканват се всички интересувачи се.