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**Fakultät für Mathematik und
Wirtschaftswissenschaften**
Institut für Stochastik

Prof. Dr. Evgeny Spodarev

Helmholtzstraße 18
89081 Ulm, Germany

Tel: +49 731 50-23530
Fax: +49 731 50-23649
evgeny.spodarev@uni-ulm.de
http://www.uni-ulm.de/stochastik/

29. April 2010

Einladung zum Vortrag

von

Frau Ekaterina Bulinskaya
MOSCOW STATE UNIVERSITY

Branching Random Walks

Branching random walk (BRW) is a special case of branching particle system in which the particles may perform random walk on a graph, on an integer lattice Z^d, on Euclidian space R^d, $d \in N$ or in general Polish space. Different models of BRW have been investigated by many authors. BRW has found numerous applications in chemistry, statistical physics, genetics, queueing theory and so on. In the first part of the talk we recall some necessary facts from the theory of random walks and the theory of branching processes. Then follows a brief review of various types of BRW and further on we focus on two models of BRW on Z^d, $d \in N$, with a single source of branching. The first model, called symmetric BRW (SBRW), was studied in the monograph "Branching Random Walks in Inhomogeneous Media" by Yarovaya E.B. The catalytic BRW (CBRW) was proposed by Vatutin V.A., Topchii V.A. and Yarovaya E.B. Such random processes are used as an approximation of catalytic superprocesses considered by D.A.Dawson, K.Fleischmann and J.-F.LeGall. Within both critical SBRW and critical CBRW we establish the limit conditional behavior of the normed number of particles at the source of branching as time tends to infinity. It is worth mentioning that this limit law is exponential when $d \neq 2$, $d \in N$, and is discrete for BRW on Z^2. Under some assumptions we also find the limit conditional joint distribution of the number of particles at the source and the number of particles outside it. These random variables are asymptotically independent in time. Giving the sketch of the proofs we discuss different approaches, namely the reduction of the underlying process to a two-type Bellman-Harris process and employment of differential equations in Banach spaces combined with spectral theory.

Termin: Mittwoch, 19. Mai 2010, 14 Uhr ct.
Ort: Universität Ulm, Helmholtzstr. 18, Raum 120

Interessenten sind herzlich eingeladen.
Der Vortrag findet im Rahmen unseres Forschungsseminars statt.

gez. E. Spodarev