TECHNISCHE UNIVERSITÄT DARMSTADT

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

FB Mathematik	FB Physik, Mathematik und Informatik Institut für Mathematik	FB Informatik und Mathematik Institut für Mathematik Schwerpunkt Stochastik
F. Aurzada, V. Betz	M. Birkner, L. Hartung, A. Klenke	J. Blath, N. Kurt, Ch. Kühn, R. Neininger, G. Schneider

Rhein-Main-Kolloquium Stochastik

TU Darmstadt, Goethe-Universität Frankfurt und Gutenberg-Universität Mainz

Friday, 25 April, 2025

3:15 pm: Alexander Drewitz (Universität zu Köln)

"(Near-)critical behavior of a strongly correlated percolation model"
For (near-)critical independent Bernoulli percolation, particularly profound results have been obtained in the high-dimensional setting as well as on planar lattices. We consider a strongly correlated percolation model — the level sets of the metric graph Gaussian free field — where significant understanding has also been developed regarding its (near-)critical behavior in intermediate dimensions. We will explain the origin of the model's integrability, and discuss its implications for the associated universality class.

4:15 pm: Coffee break

4:45 pm: Benedikt Jahnel (Universität Braunschweig)

"First contact percolation"
The talk presents a version of first passage percolation on $\Z^d$ where the random passage times on the edges are replaced by contact times given by random closed sets on $\R$. Similarly to the contact process without recovery, an infection can spread into the system along increasing sequences of contact times. In case of stationary contact times, we can identify associated first passage percolation models, which in turn establish shape theorems also for first contact percolation. In case of periodic contact times that reflect some reoccurring daily pattern, we also present shape theorems with limiting shapes that are universal with respect to the within-one-day contact distribution. In this case, we also prove a Poisson approximation for increasing numbers of within-one-day contacts. Finally, we present a comparison of the limiting speeds of three models - all calibrated to have one expected contact per day - that suggests that less randomness is beneficial for the speed of the infection. The proofs rest on coupling and subergodicity arguments. This is joint work with Anh Duc Vu and Lukas Lüchtrath.

https://www.stochastik.mathematik.uni-mainz.de/rhein-main-kolloquium-stochastik/

Venue:
TU Darmstadt
S1|05 Room 24 (Maschinenhaus)
Magdalenenstraße 12
64289 Darmstadt

Any interested parties are welcome.

Yours, Frank Aurzada and Volker Betz