TECHNISCHE UNIVERSITÄT DARMSTADT

JOHANNES GUTENBERG UNIVERSITÄT MAINZ

GOETHE UNIVERSITÄT FRANKFURT AM MAIN

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Schwerpunkt Stochastik

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# Rhein-Main-Kolloquium Stochastik

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

**Friday, 8 May 2026**

**3:15 pm: Jack Hanson - Universität Hamburg - Chemical distances and k-point functions in high-dimensional percolation**

In 1984, Aizenman and Newman conjectured that k-point functions in high-dimensional critical percolation should behave as "simple combinations of the two-point function" governed by tree diagrams resembling those of a phi^3 field theory. We prove this conjecture. We also establish an asymptotic distributional law for the intrinsic or "chemical" distance in large critical clusters.

**4:15 pm: Coffee break**

**4:45 pm: Johannes Baeumler - UCLA - Arrival-time estimations for random recursive trees**

We estimate the arrival time of vertices in a uniform random recursive tree from its unlabeled structure. Using centrality-based rankings, we derive tail bounds for the relative estimation error that are uniform in the vertex and the tree size. For the ranking induced by Jordan centrality, the probability that the estimate exceeds the true arrival time by a factor $S$ decays on the order of $1/S$, while the probability that it is smaller than the true arrival time by a factor $1/S$ decays exponentially in $S$. We introduce a refined centrality measure whose overestimation probability decays on the order of $(\log S)/S^{2}$, at the cost of a heavier lower tail of order $1/S^{2}$. These results identify a tradeoff between upper- and lower-tail performance in arrival-time estimation. Joint work with Simon Briend and Joost Jorritsma

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

Venue:
Johannes Gutenberg-Universität Mainz
Building 2413, 5th floor | Room 05-432 (Hilbertraum)
Staudingerweg 9, 55128 Mainz

Any interested parties are welcome.

Yours, Lisa Hartung