

Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

Thursday, 7 December 2023, 16:30

Lipschitz-Saal (LWK 1.016)

Werner Krauth

ENS Paris

The lifted TASEP, an integrable example of non-reversible Markov chains

In recent years, non-reversible Markov chains have been at the origin of powerful Monte Carlo algorithms that are liberated from the detailed-balance condition. In this Oberseminar, I will discuss the lifted (1) TASEP (2), a Markov chain which is at the same time close to practical applications and integrable by the Bethe ansatz. The model describes one-dimensional particles on a lattice, with hard-sphere interactions. Its astonishing properties, which are only partially understood, are reminiscent of the ECMC (3) algorithms in higher dimensions.

(1) Lifted: as defined by Chen, Lovász and Pak (1999)

(2) TASEP: “Totally asymmetric simple exclusion process”

(3) ECMC: “event-chain Monte Carlo”