

Institute for Applied Mathematics, Bonn University

Oberseminar Stochastik

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Lipschitz-Saal (LWK 1.016)

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Strong disorder and very strong disorder are equivalent for directed polymers

We consider the directed polymer model. In spatial dimension $d > 2$, the model undergoes a phase transition between a high-temperature/weak disorder phase and a low-temperature/strong disorder phase, which is characterized by whether the associated (normalized) partition function converges to zero. From the physical point of view, it is more natural to consider a very-strong-disorder regime, characterized by whether the partition function converges to zero exponentially fast. It has been a long-standing conjecture that these two notions are equivalent, which we now confirm. Moreover, our proof reveals that weak disorder holds at the critical value. Joint work with Hubert Lacoin.