Universität Bielefeld

Fakultät für Physik & Fakultät für Mathematik

Kolloquium Mathematische Physik

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Exponential number of equilibria and depinning threshold for directed polymers in a random potential

Using the Kac-Rice approach, we show that the mean number of all possible equilibria of an elastic line (directed polymer), confined in a harmonic well and submitted to a quenched random Gaussian potential grows exponentially with its length L. The growth rate is found to be directly related to the fluctuations of the Lyapunov exponent of an associated Anderson localization problem of a 1-d Schroedinger equation in a random potential. Eventually this rate controls the value of a threshold for the depinning transition in presence of an applied force, and we provide an upper bound for the threshold. The talk is based on the joint paper with Pierre Le Doussal, Alberto Rosso and Christophe Texier [arXiv:1703.10066]

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