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Minkowski content of the scaling limit of 3D loop-erased random walk

The loop-erased random walk (LERW) is a model for random self-avoiding curves. Since its introduction by Lawler in the early 1980s, the scaling limits of LERW have been thoroughly studied. While these limits are well-understood in dimensions 2 and 4 and higher, the three-dimensional case presents unique challenges.

This talk will present recent advances on the Minkowski content of the scaling limit of the three-dimensional LERW. Due to the absence of essential tools in the continuum in this dimension, key parts of the analysis are carried out in discrete space. Specifically, we establish sharp estimates for the one-point function and ball-hitting probabilities for the LERW on $\mathbb{Z}^3$. This talk is based on joint work with Xinyi Li and Daisuke Shiraishi.