On the localization-delocalization critical line for the random copolymer

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The copolymer model was originally introduced by Garel, Huse, Leibler, and Orlando in 1989, as a simple model for the behavior of a polymer at a selective interface, for instance between oil and water, where the nodes of the polymer are either water-repellent, or oil-repellent, placed in a random way (and/or with random strengths). The first rigoros results were proved end of the nineties by Sinai and in Bolthausen/den Hollander. In the latter work, the existence of a non-trivial localization-delocalization critical line was established.

We present a new approach based on a recent general large deviation result by Birkner-Greven-den Hollander. This enable to prove new results about this critical line.

This joint work with Frank den Hollander and Alex Opoku.