THE RANDOM PINNING MODEL: HARRIS CRITERION AND DISORDER RELEVANCE

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The so-called Harris criterion (A. B. Harris '74), is a non-rigorous argument, frequently used in theoretical physics literature to predict whether the critical properties of a statistical mechanics system will be qualitatively modified by a small concentration of impurities ("relevance of disorder"). Giving mathematical bases to this argument is an old challenge in the theory of disordered systems and rigorous results are very scarce. In recent years, the so-called polymer pinning model has proved to be the ideal context to attack this problem. In particular, we have given a rigorous justification of the Harris criterion for this class of models and we have solved an long controversy about the "relevance" of disorder for the pinning model in (1+1) dimensions. I will give a non-technical overview of related results.

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