

EIGENVALUE ORDER STATISTICS FOR RANDOM SCHRÖDINGER OPERATORS

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I will describe recent joint work with W. König (WIAS and TU Berlin) on eigenvalue order statistics in (lattice) Schrödinger operators with random single-site potentials. The probability law for the potentials is in the class of random variables with doubly-exponential tail. In this situation, the leading eigenvalues for such an operator in a finite box tend, after a proper shift and scaling, to a Poisson process with Gumbel intensity measure. The eigenfunctions have strong exponential decay from the localization center with a rate that can be identified. The work is a first step in the understanding of the localization in the parabolic Anderson problem with such potential distributions. The Gumbel distribution appears to be universal for all random potentials where the eigenfunction is not distributed at a single lattice site.