M A T H E M A T I C A L P H Y S I C S S E M I N A R

Rutgers University
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Quantum diffusion and delocalization for random band matrices

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Abstract

We give a summary of recent progress in establishing the diffusion approximation for random band matrices. We obtain a rigorous derivation of the diffusion profile in the regime $W > N^{4/5}$, where W is the band width and N the dimension of the matrix. As a corollary, we prove complete delocalization of the eigenvectors. Our proof is based on a new self-consistent equation for the Green function.
Joint work with L. Erdos, H.T. Yau, and J. Yin.