

Localization for transversally periodic random potentials on binary trees

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Abstract

We consider a random Schrödinger operator on the binary tree with a random potential which is the sum of a random radially symmetric potential, Q_r , and a random transversally periodic potential, κQ_t , with coupling constant κ . Using a new one-dimensional dynamical systems approach combined with Jensen's inequality in hyperbolic space (our key estimate) we obtain a fractional moment estimate proving localization for small and large κ . Together with a previous result we therefore obtain a model with two Anderson transitions, from localization to delocalization and back to localization, when increasing κ . As a by-product we also have a partially new proof of one-dimensional Anderson localization at any disorder. This is joint work with R. Froese, D. Lee, C. Sadel, and G. Stolz.