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Absolutely continuous spectrum for a random potential on a tree with strong transverse correlations and large weighted loops

We consider random Schrödinger operators on tree graphs and prove absolutely continuous spectrum at small disorder for two models.

The first model is the usual binary tree with certain strongly correlated random potentials. These potentials are of interest since for complete correlation they exhibit localization at all disorders. In the second model we change the tree graph by adding all possible edges to the graph inside each sphere, with weights proportional to the number of points in the sphere.

This is joint work with David Hasler and Wolfgang Spitzer.