

Localization on quantum graphs with random edge lengths

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Abstract: The spectral properties of the Laplacian on a class of quantum graphs with random metric structure are studied. Namely, we consider quantum graphs spanned by the simple \mathbb{Z}^d -lattice with δ -type boundary conditions at the vertices, and we assume that the edge lengths are randomly independently identically distributed. Under some assumptions on the coupling constant, we show that the operator exhibits the Anderson localization at the bottom of the spectrum almost surely. We also study the case of other spectral edges. Joint work with Frederic Klopp.