

Texas Tech University. Analysis Seminars.

Anderson localization in nonlocal models. Part I.

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ABSTRACT. It is well known that many physical systems will exhibit localized energy states in the presence of certain environmental disturbances. Anderson localization has attracted attention from the physics, mathematical physics, numerical analysis, and pure analysis communities, but in this talk we will provide a more operator theoretical approach. In this talk, we will provide two new directions of study of the Anderson localization problem. First, we will extend the problem to consider nonlocal operators on discrete graphs. Next, we will develop a novel method of studying the localization properties of these nonlocal operators via the consideration of the spectrum of the operators. This approach allows for the development of surprising results that allow for the improvement of many existing results. This series of talks will include a review of the pertinent concepts from analysis, making the talk accessible to all graduate students (even those who do not study analysis).