

Anderson Localization: Multifractality, Symmetries and Topologies

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More than half a century after its discovery, Anderson localization in disordered systems remains a vibrant research field. Apart from electronic conductors in semiconductor structures, experimental realizations include localization of light, cold atoms, ultrasound, and optically driven atomic systems. Recently, the field received an additional strong boost through the discovery of graphene as well as topological insulators and superconductors. In this colloquium talk, I will discuss particularly salient aspects of the theory of Anderson localization. These include the criticality (most prominently, wave function multifractality) at Anderson localization transitions, impact of symmetries and topologies, as well the role of interactions.