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Revisiting the Anderson Model with Power-Law Correlated Disorder in 1D and 2D[1] GREG PETERSEN, NANCY SANDLER, The Ohio University — The dimensionality of a disordered system directly affects the critical energy where a localization/delocalization transition occurs. In non-interacting systems with uncorrelated disorder, it is widely known that all states in one-dimension are localized. However, for some correlations there exist transition energies similar to mobility edges or small subsets of extended states that are robust against disorder. In this talk, we will present results on the diffusion of a wavepacket in a power-law correlated random potential of the form $\langle V(r)V(0)\rangle = \frac{1}{(a+r)^{\alpha}}$. We also report results for the participation ratio $P_r = \frac{1}{N}\frac{\langle|a_i|^2\rangle^2}{\langle|a_i|^4\rangle}$. Preliminary results for 1D chains support the existence of a mobility edge near the band center. Square and graphene lattices will also be discussed.

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