

Modeling Quasicrystals with Dynamical Systems

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Abstract: The Nobel Prize-winning discovery of quasicrystals has spurred much work in aperiodic sequences and tilings. In this talk, we will discuss Cantor sets that appear as spectra of discrete Schrodinger operators with potentials given by primitive invertible substitution sequences, an example of a one-dimensional model for quasicrystals. These operators are moderated by a real parameter λ and we will study the Hausdorff dimension of the spectrum as a function of λ . We also present preliminary numerical data on the spectrum of the discrete Laplacian on the Penrose tiling and octagonal tiling.