



The rising STAR of Texas

Differential Equations and Applied Math Seminar

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11am-12pm March 26th, 2021

Zoom

Title: Irreducibility of the Fermi variety for discrete periodic Schrödinger operators

Abstract: Let H_0 be a discrete periodic Schrödinger operator on \mathbb{Z}^d :

$$H_0 = -\Delta + V,$$

where Δ is the discrete Laplacian and $V : \mathbb{Z}^d \rightarrow \mathbb{C}$ is periodic. We prove that for any $d \geq 3$, the Fermi variety at every energy level is irreducible (modulo periodicity). For $d = 2$, we prove that the Fermi variety at every energy level except for the average of the potential is irreducible (modulo periodicity) and the Fermi variety at the average of the potential has at most two irreducible components (modulo periodicity). This is sharp since for $d = 2$ and a constant potential V , the Fermi variety at V -level has exactly two irreducible components (modulo periodicity). In particular, we show that the Bloch variety is irreducible (modulo periodicity) for any $d \geq 2$.

Interested faculty and graduate students are encouraged to attend.