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Chris A Marx* (cmarx@oberlin.edu), Oberlin College, Department of Mathematics, 10 N Professor Street, Oberlin, OH 44074. *Large coupling asymptotics for the Lyapunov exponent of quasi-periodic Schrödinger operators.*

In solid states physics, quasi-periodic Schrödinger operators capture the response of electrons in a 2d-crystal layer subject to an external magnetic field. Mathematically, this corresponds to studying the spectral properties of so-called quasi-periodic Schrödinger operators, discrete Schrödinger operators whose potential sequence is generated by evaluating an analytic function on the unit circle along a trajectory of irrational rotations.

In this talk we quantify the behavior of solutions to the Schrödinger equation in the “large potential regime,” by proving an asymptotic formula for the Lyapunov exponent of the dynamical system associated with the Schrödinger equation. Heuristically, the Lyapunov exponent can be viewed as an inverse decay rate of the solutions to the Schrödinger equation.

The talk is based on joint work with Rui Han (Georgia Tech). (Received September 10, 2019)