

Stahl–Totik regularity for continuum Schrödinger operators

Benjamin Eichinger

Johannes Kepler Universität Linz

Monday 9.3.2020, 14'15 – 15'45, Seminarraum DA grün 03 C
(Freihaus Building of the TU Wien, green area, 3rd floor)

Abstract

We develop a theory of Stahl–Totik regularity for half-line Schrödinger operators $-\partial_x^2 + V$ with bounded potentials (in a local L^1 sense). We prove a universal thickness result for the essential spectrum, E , in the language of potential theory. Namely, E is an Akhiezer–Levin set and the Martin function of the complementary domain at ∞ obeys an asymptotic expansion $\sqrt{-z} + \frac{a_E}{\sqrt{-z}} + o(\frac{1}{\sqrt{-z}})$ as $z \rightarrow -\infty$. The constant a_E plays the role of a Robin constant suited for Schrödinger operators. Stahl–Totik regularity is characterized in terms of the behavior of the averages $\frac{1}{x} \int_0^x V(t) dt$ and root asymptotics of the Dirichlet solutions as $x \rightarrow \infty$. Moreover, it is connected to the zero counting measure for finite truncations. Applications to decaying and ergodic potentials will be discussed.

This talk is based on a joint work with M.Lukić.