

Classical wave methods and modern gauge transforms: spectral asymptotics in the one dimensional case

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Abstract: The question of high energy asymptotics for the kernel of the spectral projector of the Laplacian in the context of compact manifolds is one of the most well studied areas of spectral theory since the early 1900s. In this talk, we discuss the analogous question for Schrodinger operators on the real line: What are the asymptotics for the spectral projector of a Schrodinger operator on \mathbb{R} ? By combining the classical wave method, originally introduced by Levitan in the 1950s, with the periodic gauge transform technique, we are able to show that when the potential is bounded with all derivatives this kernel, known as the local density of states, has a full asymptotic expansion in powers of the spectral parameter. This proves a conjecture of Parnovski–Shterenberg in the one dimensional case.

Based on joint work with Leonid Parnovski and Roman Shterenberg