SPECTRAL THEORY FOR THE SCHRÖDINGER EQUATION WITH L^2-SPARSE POTENTIALS

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A potential V defined on the positive half line is said to be L^2-sparse if there exist arbitrarily long intervals on which the L^2 norm of V is arbitrarily small. Equivalently, V is the sum of a sparse potential (ie a potential vanishing on long intervals) and an L^2 potential.

This talk will examine the spectral theory of L^2-sparse potentials, using the theory of the Weyl m-function, and in particular using hyperbolic space estimates to derive bounds for m.

Particular consequences will be the absence of negative absolutely continuous spectrum, an estimate for the large distance asymptotics of the logarithmic derivative of solutions of the Schrödinger equation at real spectral parameter, and an analysis of the spectrum for some interesting perturbations of L^2-sparse potentials.

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