

1027-35-221

Gregory Eskin, Department of Mathematics, UCLA, Los Angeles, CA 90095, and **James Ralston***, Department of Mathematics, UCLA, Los Angeles, CA 90095-1555. *Inverse Spectral Problems in Rectangular Domains.*

We consider the Schrödinger operator $-\Delta + q$ in domains of the form $R = \{x \in \mathbb{R}^n : 0 \leq x_i \leq a_i, i = 1, \dots, n\}$ with either Dirichlet or Neumann boundary conditions on the faces of R , and study the constraints on q imposed by fixing the spectrum of $-\Delta + q$ with these boundary conditions. We work in the space of potentials, q , which become real-analytic on \mathbb{R}^n when they are extended evenly across the coordinate planes and then periodically. Our results have the corollary that there are no continuous isospectral deformations for these operators within that class of potentials. This work is based on new formulas for the trace of the wave group in this setting. In addition to the inverse spectral results these formulas lead to asymptotic expansions for the traces of the wave and heat kernels on rectangular domains. (Received February 27, 2007)