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Abstracts of Short Communications and Posters

Section:

11. Mathematical Physics

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Geometric spectral inversion
We consider the Schrödinger operator $H = -\Delta + vf(x)$ on a suitable domain $D(H)$ in $L^2(R)$, where $v > 0$ is a parameter and $f(x)$ is the potential *shape* which is (i) bounded below, (ii) symmetric, (iii) monotone non-decreasing for $x > 0$. We suppose that $E_n = F_n(v)$, for v sufficiently large, represents the n-th discrete eigenvalue of H as a function of the 'coupling' parameter v. We discuss how the potential shape f can be reconstructed from *one* of the energy functions F_n alone.
References:
R. L. Hall, Geometric spectral inversion, *J. Phys. A* **28**, (1995) 1771–1786; Spectral inheritance of potentials with flat bottoms, *Phys. Rev. A***50**, (1994), 2876–2880; Geometric spectral inversion by the WKB approximation, *Phys. Rev. A***51** (1995), 1787–1791.