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Title: Singular inverse spectral problems

Abstract:

We consider inverse spectral problems associated with the singular Sturm-Liouville equation

$$\phi'' + \left(\lambda - V(x) - \frac{\ell(\ell+1)}{x^2}\right)\phi = 0 \qquad 0 < x < 1$$

$\ell = 0, 1, 2 \ldots,$
which is obtained by separation of variables in the 3-D radial Schrodinger equation. A common feature in many approaches is the use of special (almost) isospectral transformations, by means of which a reduction to a similar problem in the classical $\ell = 0$ case is possible. In this talk I will focus on the development of computational techniques suggested by these ideas.