

MATREI CONFERENCE PROBLEM

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Let $H = -\Delta + V$ in $L^2(\mathbf{R}^n)$ where $n > 1$ and $V(x)$ is a complex bounded potential vanishing at infinity at some specified rate, for example

$$\|V\|_p^p := \int_{\mathbf{R}^n} |V(x)|^p dx \leq c$$

for some specified p and c . Find effective bounds on the complex eigenvalues of H . In particular if $\lambda = x + iy$ is an eigenvalue does y have to converge to zero as $x \rightarrow +\infty$? Note that if $n = 1$ we have the sharp bound

$$|\lambda| \leq \|V\|_1^2/4.$$

for all complex eigenvalues λ by

A A Abramov, A Aslanyan and E B Davies: Bounds on complex eigenvalues and resonances. J. Phys. A, 34 (2001) 57-72.

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