

RIESZ BASIS FOR SCHRÖDINGER OPERATOR WITH COMPLEX POTENTIAL

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Consider the self-adjoint harmonic oscillator $A_0 := -d^2/dx^2 + x^2$ in $L^2(\mathbb{R})$. Define $A := A_0 + V$ with a complex-valued potential $V \in L^\infty(\mathbb{R})$.

Open problem: Is the eigensystem of A a Riesz basis?

It is known that the answer is ‘yes’ if $V \in L^p(\mathbb{R})$ for some $1 \leq p < \infty$.