Non-Real Eigenvalues of Singular Indefinite Sturm-Liouville Operators

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joint work with J. Behrndt and C. Trunk

We study a Sturm-Liouville expression with indefinite weight of the form $\mathrm{sgn}\,(-d^2/dx^2 + V)$ on $\mathbb{R}$ and the non-real eigenvalues of an associated selfadjoint operator in a Krein space. For real-valued potentials V with a certain behaviour at $\pm\infty$ we prove that there are no real eigenvalues and the number of non-real eigenvalues (counting multiplicities) coincides with the number of negative eigenvalues of the selfadjoint operator associated to $-d^2/dx^2 + V$ in $L^2(\mathbb{R})$. The general results are illustrated with examples.