Summary: Formally symmetric differential operators on weighted Hardy-Hilbert spaces are analyzed, along with adjoint pairs of differential operators. Eigenvalue problems for such operators are rather special, but include many of the classical Riemann and Heun equations. Symmetric minimal operators are characterized. A regular class whose leading coefficients have no zeros on the unit circle are shown to be essentially self-adjoint. Eigenvalue asymptotics are established. Some extensions to non-self-adjoint operators are also considered.

MSC:
47E05 General theory of ordinary differential operators
47B25 Linear symmetric and selfadjoint operators (unbounded)
47A75 Eigenvalue problems for linear operators
47B28 Nonselfadjoint operators
34L05 General spectral theory of ordinary differential operators
34M03 Linear ordinary differential equations and systems in the complex domain

Keywords:
analytic differential operators; weighted Hardy space; self-adjoint differential operators

Full Text: DOI arXiv

References:


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