

Sturm-Liouville operators with operator potentials¹

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We consider self-adjoint extensions of symmetric operators of the form

$$(Af)(x) := -\frac{d^2}{dx^2}f(x) + Tf(x), \quad f \in \text{dom}(A) := W_0^{2,2}(\mathbb{R}_+, \mathfrak{h})$$

in the Hilbert space $\mathfrak{H} := L^2(\mathbb{R}_+, \mathfrak{h})$ where T is a (unbounded) self-adjoint operator in the infinite dimensional Hilbert space \mathfrak{h} . In particular, we find conditions under which the absolutely continuous parts of different self-adjoint extensions of A are unitarily equivalent.

The investigations are carried out in the framework of boundary triplets. In particular, the Weyl function is computed explicitly. The results are applied to elliptic partial differential operators in $L^2(\mathbb{R}_+ \times \mathbb{R})$.

¹joint work with Mark M. Malamud