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On One-dimensional Differential Operators with Distribution Coefficients

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The talk deals with two classes of singular differential expressions on the finite interval: the Sturm-Liouville expressions

$$l(y) = -(py')' + qy, \quad q = Q',\ 1/p, Q/p, Q^2/p \in L_1,$$

and the higher-order formal differential expressions

$$l(y) = i^m y^{(m)} + qy, \quad m \geq 3, \quad q = Q',\ Q \in L_1,$$

where the derivative of the function Q is understood in the sense of distributions. Due to new regularizations, the corresponding operators are correctly defined as quasi-differential. Their resolvent approximation is investigated. In a symmetric case all self-adjoint and maximal dissipative extensions and generalized resolvents are described in terms of homogeneous boundary conditions of the canonical form.

[1] A. S. Goriunov, V. A. Mikhailets *MFAT* 2, (2010), p. 120.

[2] A. S. Goriunov, V. A. Mikhailets *Proc. Inst. Math. NASU* **7**, 1, (2010).