Problems associated with differential operators

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In this thesis we study the spectral properties of operators which are generated by general ordinary quasi - differential expression of the formM[Y] = 1n y[n] defined on the set (M) = 1 y : - 13 E ACloc(ab)' r = 1.2. ...,n } in a weighted Hilbert space L2(a,b). We are particularly concerned with expressions M which are not formally symmetric (formally symmetric means M = M+ where M+ is the formal adjoint of M) and especially with the operators which are regularly solvable and well - posed with respect to the minimal operators generated by M and MI- in the sense of W.D. Evans inChapter 0 is an introduction in which the problems in the thesis are introduced. Also terms which will be used later are defined and definitions and results which are used often in the thesis are quoted, in Chapter I we introduce the general ordinary quasi - differential expressions and discuss their adjoints. the Lagrange identity and Green's formula: we also define regular and singular end points, Chapter II deals with the regular problem. The definitions of maximal and minimal operators are given in S II.1. In § 11.2 properties of the maximal and minimal operators are obtained and the operators S which are — 11 — regularly solvable with respect to To(M), To(?) are shown to be characterized by boundary conditions at the end points of [a,b]. Chapter III deals with the singular problem. In S III.1 and § 111.2 results analogous to those of Chapter II are obtained. § 111.3 properties of quasi - differential equations, the resolvents of well - posed extensions and the essential spectra of well - posed and regularly solvable extensions of the minimal operator To(M) are given. chapter IV deals with the boundary conditions for the general ordinary quasi - differential operators and their adjoints in the case of one regular end point and the other point may be either regular or