Symmetric Operator Matrices. Extensions and Spectral Decompositions

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We deal with operators of the form

$$\mathbf{L} = \begin{pmatrix} A & B_1 \\ B_0 & C \end{pmatrix}$$

acting in Hilbert space $H_1 \times H_2$, where A and C are symmetric operators in H_1 and H_2, respectively, while B_0 and B_1 are mutually adjoint. We find sufficient conditions which guarantee the existence of self-adjoint extensions of $\mathbf{L}$ and prove the existence of graph invariant subspaces for such extensions.