



Spectral Properties of a Discrete Impulsive Schrödinger Equation

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Abstract

In this work, we investigate the spectral analysis of a difference quadratic pencil of Schrödinger equation on the half line with an matrix impulsive condition. We first determine Jost solutions of the problem and present some asymptotic equations for these solutions. Then, by obtaining the resolvent operator and Green function, we find the sets of eigenvalues and spectral singularities of the impulsive problem. Furthermore, we present suitable conditions for the finiteness and multiplicities of eigenvalues and spectral singularities of the problem.

Keywords: Quadratic pencil of Schrödinger equations, impulsive condition, spectral singularities, eigenvalues, resolvent operator.

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