

On the spectrum of the generalized difference operator, $ab\Delta$ over the sequence space c_0

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Abstract

The main purpose of this paper is to determine the spectrum of the generalized difference operator Δ_v over the sequence space l_p , where $1 < p < \infty$. The operator Δ_v on the space l_p is defined by $\Delta_v x = \Delta_v(x_k) = (v_k x_k - v_{k-1} x_{k-1})_{k=0}^{\infty}$ with $x_{-1} = v_{-1} = 0$, where $x = (x_k) \in l_p$ and (v_k) is a strictly decreasing sequence of positive real numbers satisfying certain conditions. In this paper, some results concerning the spectrum, the point spectrum, the residual spectrum and the continuous spectrum of the operator Δ_v on the space l_p have been found.

Key words: *spectrum of an operator, Generalized difference operator, The sequence space l_p .*