

On the Fine Spectrum of the Generalized Difference Operator $\Delta a, b$, over the Sequence Space $l_p, (1 < p < \infty)$

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Abstract

The generalized difference operator $\Delta a, b$, on the sequence space l_p is defined by $(\Delta a)_k = a_k - a_{k-1} + b_k a_{k-1}$ with $a_0 = 0$, $b_k \neq 0$ where $(a)_k$ and $(b)_k$ are two convergent sequences of nonzero real numbers satisfying certain conditions. It is the purpose of this paper to completely determine the spectrum, the point spectrum, the residual spectrum and the continuous spectrum of the operator $\Delta a, b$, on the sequence space l_p , where $1 < p < \infty$.

Keywords: *Spectrum of an operator, Generalized difference operator, Sequence spaces.*