Abstract

Motivated with the development of scalar and vector valued sequence spaces for the last six decades by earlier authors namely, Nakano, Simons, Maddox, Kamthan, Gupta, Kizmaz, Jakimovski, Russell and others, the present work is aimed to introduce and study new vector valued sequence spaces using modulus and Orlicz functions with suitable topologies. Further, based on the work in the direction of spectrum and fine spectrum of bounded linear operators on sequence spaces by authors such as Rhoades, Gonzalez, Reade, Yildirim, Altay, Basar, we have also concentrated our study to spectrum and fine spectrum of generalized difference operator Δ_v and Δ_{uv} on sequence spaces l_1 and c_0. The thesis consists of seven Chapters including introductory Chapter.

Chapter 1 deals with detail survey of earlier work for known scalar and vector valued sequence spaces defined by using difference operator, modulus and Orlicz functions. Similarly, the results on spectrum and fine spectrum of the bounded linear operators on sequence spaces by earlier authors are discussed in detail. The second part of the introductory Chapter contains Definitions, Lemmas and known results, which are used in sequel. In Chapter 2, the vector valued sequence space $N_p(E, \Delta^m, f, s)$ using modulus function f is introduced. For suitable choices of N_p, E, f, m and s, the sequence space $N_p(E, \Delta^m, f, s)$ includes many of the known scalar as well as vector valued sequence spaces. Chapter 3 deals with the vector valued sequence space $X(E, \Delta^m, M, p, s)$ defined by using Orlicz function M. For suitable choices of X, E, m, p and s, the sequence space $X(E, \Delta^m, M, p, s)$ includes many of the earlier known scalar as well as vector valued sequence spaces. Chapter 4 discusses the vector valued sequence space $Z_p(E, Q, \Delta^m, F, \Lambda)$ associated with the multiplier sequence Λ.

In Chapter 5, the operator Δ_v is introduced with the help of real sequence $v = (v_k)$ under suitable conditions. The results on spectrum and fine spectrum for the operator Δ_v on sequence spaces l_1 and c_0 are obtained. In continuation of our work on spectrum, the operator Δ_{uv} is introduced with the help of real sequences $u = (u_k)$ and $v = (v_k)$ under suitable conditions. The results on spectrum and fine spectrum for the operator Δ_{uv} on these sequence spaces are studied in Chapter 6.

Chapter 7 highlights the conclusion and future scope of research work in these directions.