

THE GENERALIZED NON-ABSOLUTE TYPE OF TRIPLE Γ^3 SEQUENCE SPACES DEFINED MUSIELAK-ORLICZ FUNCTION

SHYAMAL DEBNATH and NAGARAJAN SUBRAMANIAN

Abstract. In this paper, we introduce the notion of $\lambda_{mnk}-\Gamma^3$ and Λ^3 sequences. Further, we introduce the spaces $\left[\Gamma_f^{3\lambda}, \|(d(x_1, 0), d(x_2, 0), \dots, d(x_{n-1}, 0))\|_p\right]$ and $\left[\Lambda_f^{3\lambda}, \|(d(x_1, 0), d(x_2, 0), \dots, d(x_{n-1}, 0))\|_p\right]$, which are of non-absolute type, and we prove that these spaces are linearly isomorphic to the spaces Γ^3 and Λ^3 , respectively. Moreover, we establish some inclusion relations between these spaces.

MSC 2010. 40A05, 40C05, 46A45, 03E72, 46B20.

Key words. Analytic sequence, triple sequences, Γ^3 space, difference sequence space, Musielak-Orlicz function, p -metric space, non-absolute type.

REFERENCES

- [1] ESI, A., *On some triple almost lacunary sequence spaces defined by Orlicz functions*, Research & Reviews: Discrete Mathematical Structures, **1** (2014), 2, 16–25.
- [2] ESI, A. and NECDET CATALBAS, M., *Almost convergence of triple sequences*, Global Journal of Mathematical Analysis, **2** (2014), 1, 6–10.
- [3] ESI, A. and SAVAS, E., *On lacunary statistically convergent triple sequences in probabilistic normed space*, Appl. Math. Inf. Sci., **9** (2015), 5, 2529–2534.
- [4] DATTA, A.J., ESI, A. and TRIPATHY, B.C. *Statistically convergent triple sequence spaces defined by Orlicz function*, J. Math. Anal., **4** (2013), 2, 16–22.
- [5] DEBNATH, S., SARMA, B. and DAS, B.C. *Some generalized triple sequence spaces of real numbers*, J. Nonlinear Anal. Optim., **6** (2015), 1, 71–79.
- [6] KIZMAZ, H., *On certain sequence spaces*, Canad. Math. Bull., **24** (1981), 2, 169–176.
- [7] KAMTHAN, P.K. and GUPTA, M., *Sequence spaces and series*, Lecture Notes in Pure and Appl. Math., Vol. 65, Marcel Dekker, Inc., New York, 1981.
- [8] LINDENSTRAUSS, J. and TZAFRIRI, L., *On Orlicz sequence spaces*, Israel J. Math., **10** (1971), 379–390.
- [9] MUSIELAK, J., *Orlicz Spaces and Modular Spaces*, Lecture Notes in Math., Vol. 1034, Springer-Verlag, Berlin, 1983.
- [10] SAHINER, A., GURDAL, M. and DUDEN, F.K. *Triple sequences and their statistical convergence*, Selçuk J. Appl. Math., **8** (2007), 2, 49–55.
- [11] SAHINER, A. and TRIPATHY, B.C. *Some I-related properties of triple sequences*, Selçuk J. Appl. Math., **9** (2008), 2, 9–18.

The present paper was completed during a visit of Professor N. Subramanian to Tripura (A Central) University (May-June, 2016). The second author is very grateful to the Tripura (A Central) University for providing him hospitality. The research was supported by INSA (Indian National Science Academy) visiting fellowship, while the second author was visiting Tripura (A Central) University under the INSA visiting fellowship.

- [12] SUBRAMANIAN, N. and ESI, A. *The generalized tripled difference of χ^3 sequence spaces*, Global Journal of Mathematical Analysis, **3** (2015), 2, 54–60.
- [13] SUBRAMANIAN, N. and MURUGESAN, C. *The entire sequence over Musielak p -metric space*, J. Egyptian Math. Soc., **24** (2016), 2, 233–238.

Received January 21, 2016

Accepted September 2, 2016

Tripura University
(A Central University)
Department of Mathematics
Suryamaninagar, West Tripura
Agartala-799022, India
E-mail: shyamalnitamath@gmail.com
E-mail: debnathshyamal@tripurauniv.in

Sastra University
Department of Mathematics
Thanjavur-613 401, India
E-mail: nsmaths@yahoo.com