Dynamics of Continuous, Discrete and Impulsive Systems
Series **A:** *Mathematical Analysis* **21 (2014)** 187-200
 http://www.watam.org

ON $(K\text{-}NUC)$-PROPERTY IN MUSIELAK-ORLICZ SPACES DEFINED BY DE LA VALLÉE-POUSSIN MEANS AND SOME COUNTABLY MODULARED SPACES

Atanu Manna[1] and P. D. Srivastava[2]

[1] [2]Department of Mathematics
Indian Institute of Technology Kharagpur, Kharagpur-721302, India

Abstract. A sufficient condition for Musielak-Orlicz sequence space $V_\Phi(\lambda)$ defined by de la Vallée-Poussin means to be $(k\text{-}NUC)$, $k \geq 2$ is obtained. Under certain assumptions on φ-functions, it is shown that the modular space X_{σ_s} is a Fréchet space and the modular spaces $X_{\widehat{\sigma}}$ for $\widehat{\sigma} = \sigma_w^\mu, \sigma_q^Q, \sigma_0$ are identical as sets.

Keywords. Musielak-Orlicz function, de la Vallée-Poussin means, Luxemberg norm, $(k\text{-}NUC)$-property, Countably modulared spaces.

AMS (MOS) subject classification: 46B20, 46A45, 46A80.

References

[1] J. Albrycht and J. Musielak, Countably modulared spaces, *Studia Math.* **31**, (1968) 331 − 337.

[2] A. Baernstein, On reflexivity and summability, *Studia Math.* **42**, (1972) 91 − 94.

[3] Y. Cui and H. Hudzik, Some geometric properties related to fixed point theory in Cesàro space, Collect. Math **50**, (1999) 277 − 288.

[4] Y. Cui, H. Hudzik, W. Ping, , On k-nearly uniform convexity in Orlicz spaces, *Rev. R. Acad. Cienc. Exact. Fis. Nat (Esp)* **94**, (4) (2000) 461 − 466.

[5] Y. Cui, H. Hudzik, N. Petrot, S. Suantai, A. Szymaszkiewicz, Basic topological and geometric properties of Cesàro-Orlicz spaces, *Proc. Indian Acad. Sci. (Math. Sci.)*, **115**, 4(2005), 461-476.

[6] M. Denker and H. Hudzik, Uniformly non-$l_n^{(1)}$ Musielak-Orlicz sequence spaces, *Proc. Indian Acad. Sci.* **101**, (2)(1991), 71 − 86.

[7] R. Huff, Banach Spaces which are nearly uniformly convex, *Rockey Mountain J. Math.* **10**, (1980) 743 − 749.

[8] A. Kaminska, Uniform rotundity of Musielak-Orlicz sequence spaces, *Journal of Approximation Theory* **47**, (4) (1986) 302 − 322.

[9] D. Kutzarova, k-β and k-nearly uniformly convex Banach spaces, *J. Math. Anal. Appl.* **162**, (2)(1991) 322 − 338.

[10] L. Leindler, Über die verallgemeinerte de la Vallée-Poussinsche Summierbarkeit allgemeiner Orthogonalreihen, *Acta Math. Acad. Sci. Hungar.* **16**, (1965) 375 − 387.

[11] J. Musielak and A. Waszak, On some countably modulared spaces, *Studia Math.* **38**, (1970) 51 − 57.

[12] J. Musielak and A. Waszak, Some new countably modulared mpaces, *Comment. Math.* **15**, (1971) 209 − 215.

[13] J. Musielak, *Orlicz spaces and Modular spaces*, Springer Lecture notes in Math. , Vol. **1034** (Springer, 1983).

[14] J. Musielak and W. Orlicz, On modular spaces, *Studia Math.* **18**, (1959) 49 − 65.

[15] J. Musielak and A. Waszak, Sequence spaces generated by moduli of smoothness, *Revista Mathematica de la Universidad Complutense de Madrid* **8**, (1) (1995) 91 − 105.

[16] W. Orlicz, A note on modular spaces I, *Bull. Acad. Polon. Sci. Sér. Sci. Math. Astronom. Phys*, **9**,(1961), 157-162.

[17] S. Prus (Eds. W. A. Kirk and B. Sims), *Geometrical background of metric fixed point theory*, Handbook of Metric Fixed Point Theory, Kluwer Academic Publishers, Dordrecht, 2001, 93-132.

[18] M. M. Rao and Z.D. Ren, *Theory of Orlicz spaces*, Monographs and Textbooks in Pure and Applied Mathematics, Vol. **146** (Marcel Dekker Inc., 1991).

[19] W. Sanhan, S. Suantai, On k-nearly uniform convex property in generalized Cesàro sequence spaces, *Int. J. Math. Math. Sci.* (57), 2003 3599 − 3607.

[20] J. S. Shiue, Cesàro sequence spaces, *Tamkang Journal of Mathematics*, **1**, (1970) 19-25.

[21] N. Şimşek, E. Savaş, V. Karakaya, Some geometric and topological properties of a new sequence spaces defined by De La Vallée-Poussin Mean, *Journal of Computational Analysis and Applications*, **12**, 4(2010) 768-779.

[22] N. Şimşek, On some geometric of sequence space defined by De La Vallée-Poussin Mean, *Journal of Computational Analysis and Applications*, **13**, 3(2011) 565-573.

[23] P. D. Srivastava, A. Manna, Some difference sequence spaces generated by de la Vallée-Poussin mean, *Asian-European J. Math.*, **6**, 2(2013) 18 pages.

[24] J. M. Wang, X. B. Liu and Y. Cui, Local uniform rotundity in Musielak-Orlicz sequence space equipped with Luxemberg norm, *Comment. Math. Prace. Mat* **46**, 1(2006) 131 − 139.

[25] R. Wangkeeree, On property (k-NUC) in Cesàro-Musielak-Orlicz sequence spaces, *Thai Journal of Mathematics* **1**, (2003) 119 − 130.

Received January 2014; revised April 2014.

email: journal@monotone.uwaterloo.ca
http://monotone.uwaterloo.ca/∼journal/