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ON LACUNARY STATISTICAL φ–CONVERGENCE OF ORDER α IN PARTIAL METRIC SPACES

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Abstract. In the present paper, we introduce the notions of lacunary statistically φ-convergence and lacunary strongly φ-Cesàro summable of order α in a partial metric space (X,φ) and established the relation between them. Beside this, we get a characterization of lacunary statistical φ-convergence sequences of order α in terms of α-lacunary statistical dense subsequence of it.

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REFERENCES

[1] N. D. ARAL, H. Ş. KANDEMIR, *On f-lacunary statistical convergence of order β of double sequences for difference sequences of fractional order*, Facta Universitatis Ser. Math. Inform., **38**, 2 (2023), 329–343.
[2] N. D. ARAL, H. Ş. KANDEMIR AND M. ET, *Strongly lacunary convergence of order β of difference sequences of fractional order in neutrosophic normed spaces*, Filomat, **37**, 19 (2023), 6443–6451.
[3] N. D. ARAL, H. Ş. KANDEMIR AND M. ET, *Lacunary harmonic summability in neutrosophic normed spaces*, Filomat, **38**, 19 (2024), 6763–6771.
[4] F. BAŞAR, *Summability Theory and its Applications*, 2^{nd} ed., CRC Press/Taylor & Francis Group, Boca Raton London New York, (2022).
[5] E. BAYRAM, Ç. BEKTAŞ AND Y. ALTIN, *On statistical convergence of order α in partial metric spaces*, Georgian Math. J., **31**, 4 (2024), 557–565.
[6] V. K. BHARDWAJ, S. GUPTA, S. A. MOHIUDDINE AND A. KILIÇMAN, *On lacunary statistical boundedness*, J. Inequal. Appl., **1**, (2014), 1–11.
[7] R. C. BUCK, *Generalized asymptotic density*, Amer. J. Math., **75**, 2 (1953), 335–346.
[8] J. CONNOR, *The statistical and strong p-Cesàro convergence of sequences*, Analysis, **8**, (1–2) (1988), 47–64.
[9] J. CONNOR, *On strong matrix summability with respect to a modulus and statistical convergence*, Canad. Math. Bull., **32** (2) (1989), 194–198.
[10] R. G. COOKE, *Infinite matrices and sequence spaces*, Macmillan, London, (1950).
[11] H. FAST, *Sur la convergence statistique*, Colloq. Math., **2**, (3–4) (1951), 241–244.
[12] A. R. FREEDMAN, J. J. SEMBER AND M. RAPHAEL, *Some Cesàro-type summability spaces*, Proc. Londan math. Soc., **37**, 3 (1978), 508–520.
[13] J. A. FRIDY, *On statistical convergence*, Analysis, **5**, 4 (1985), 301–314.
[14] J. A. FRIDY AND C. ORHAN, *Lacunary statistical summability*, J. Math. anal. Appl., **173**, 2 (1993), 497–504.
[15] J. A. FRIDY AND C. ORHAN, *Lacunary statistical convergence*, Pacific J. Math., **160**, 1 (1993), 43–51.
[16] S. GUPTA AND V. K. BHARDWAJ, *On deferred f-statistical convergence*, Kyungpook Math. J., **58**, (2018), 91–103.
[17] P. K. KAMTHAN AND M. GUPTA, *Sequence Spaces and Series*, Marcel Deker. Inc., New York and Basel, (1981).

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[18] M. KUMAR, RITU AND S. GUPTA, *On statistical boundedness in partial metric spaces*, South East Asian J. Math. Math. Sci., **20**, 2 (2024), 235–246.
[19] J. LI, *Lacunary statistical convergence and inclusion properties between lacunary methods*, Int. J. Math. Math. Sci., **23**, 3 (2000), 175–180.
[20] S. G. MATTHEWS, *Partial metric topology*, Annals of the New York Academy of Sciences, **728**, 1 (1994), 183–197.
[21] S. A. MOHIUDDINE AND M. A. ALGHAMDI, *Statistical summability through a lacunary sequence in locally solid Riesz spaces*, J. Inequal Appl., **1**, (2012), 1–9.
[22] S. A. MOHIUDDINE AND M. AIYUB, *Lacunary statistical convergence in random 2-normed spaces*, Appl. Math. Inf. Sci, **6**, 3 (2012), 581–585.
[23] S. J. O. NEIL, *Two topologies are better than one*, University of Warwick. Department of Computer Science. (Department of Computer Science Research Report), CS-RR-283 (1995).
[24] I. NIVEN AND H. S. ZUCKERMAN, *An Introduction to Theory of Numbers*, Fourth. Ed., New York John Willey and Sons (1980).
[25] F. NURAY, *Statistical convergence in partial metric spaces*, Korean J. Math., **30**, 1 (2022), 155–160.
[26] D. RATH AND B. C. TRIPATHY, *On statistically convergent and statistically Cauchy sequences*, Indian J. Pure Appl. Math., **25**, (1994), 381–381.
[27] T. ŠALÁT, *On statistically convergent sequences of real numbers*, Math. Slovaca, **30**, 2 (1980), 139–150.
[28] B. SAMET, C. VETRO AND F. VETRO, *From metric to partial metric spaces*, Fixed Point Theory Appl., **1**, (2013), 118–134.
[29] I. J. SCHOENBERG, *The integrability of certain functions and related summability methods*, Amer. Math. Monthly, **66**, 5 (1959), 361–375.
[30] H. ŞENGÜL AND M. ET, *On lacunary statistical convergence of order* α, Acta Math. Sci., **34**, 2 (2014), 473–482.
[31] N. SHARMA AND S. KUMAR, *Statistical convergence and Cesàro summability of difference sequences relative to modulus function*, J. Class. Anal., **23**, 1 (2024), 51–62.
[32] H. STEINHAUS, *Sur la convergence ordinaireet la convergence asymptotique*, Colloq. Math, **2**, 1 (1951), 73–74.
[33] B. C. TRIPATHY, *On statistically convergent and statistically bounded sequences*, Bull. Malays. Math. Soc., **20**, 1 (1997), 31–33.
[34] B. C. TRIPATHY, B. HAZARIKA AND B. CHOUDHARY, *Lacunary I-convergent sequences*, Kyungpook Math. Journal, **52**, 4 (2012), 473–482.
[35] A. ZYGMUND, *Trigonometric Series*, Cambridge Univ. Press, UK 1979.