

SOME CESÀRO-TYPE AND LACUNARY STATISTICAL CONVERGENCE IN A -METRIC SPACES

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Abstract. In this paper, we investigated the concepts of statistical convergence, Cesàro convergence, lacunary convergence, and lacunary statistical convergence in A -metric spaces. We also discussed the relationships between these concepts.

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REFERENCES

- [1] R. ABAZARI, *Statistical convergence in g -metric spaces*, *Filomat*, **36**, 5 (2022), 1461–1468.
- [2] M. ABBAS, B. ALI, Y. SULEIMAN AND I. YUSUF, *Generalized coupled common fixed point results in partially ordered A -metric spaces*, *Fixed Point Theory Appl.*, **2015**, 1 (2015), 1–24.
- [3] F. BAŞAR, *Summability Theory and its Applications*, 2nd ed., CRP Press/Taylor & Francis Group, Boca Raton · London · New York (2022).
- [4] J. S. CONNOR, *The statistical and strong p -Cesàro convergence of sequences*, *Analysis*, **8**, 1–2 (1988), 47–64.
- [5] B. C. DHAGE, *Generalized metric spaces and mapping with fixed point*, *Bull. Calcutta. Math. Soc.*, **84**, (1992), 329–336.
- [6] H. FAST, *Sur la convergence statistique*, *Colloq. Math.*, **2** (1951), 241–244.
- [7] M. M. FRÉCHET, *Sur quelques points du calcul fonctionnel*, *Rend. Circ. Mat. Palermo* (1884–1940), **22**, 1 (1906), 1–72.
- [8] A. R. FREEDMAN AND J. J. SEMBER, *Densities and summability*, *Pacific J. Math.*, **95**, (1981), 293–305.
- [9] A. R. FREEDMAN, J. J. SEMBER AND M. RAPHAEL, *Some Cesàro-Type Summability Spaces*, *Proc. Lond. Math. Soc.* **37**, 3 (1978), 508–520.
- [10] J. A. FRIDY, *On statistical convergence*, *Analysis*, **5** (1985), 301–313.
- [11] J. A. FRIDY AND C. ORHAN, *Lacunary statistical summability*, *J. Math. Anal. Appl.*, **173**, (1993), 497–504.
- [12] J. A. FRIDY AND C. ORHAN, *Lacunary statistical convergence*, *Pacific J. Math.*, **160**, (1993), 43–51.
- [13] J. A. FRIDY AND M. K. KHAN, *Tauberian theorems via statistical convergence*, *J. Math. Anal. Appl.*, **228**, (1998), 73–95.
- [14] S. GÄHLER, *2-metrische Räume und ihre topologische struktur*, *Math. Nachr.*, **26**, (1963), 115–148.
- [15] E. GÜLLE, E. DÜNDAR AND U. ULUSU, *Lacunary Summability and Lacunary Statistical Convergence Concepts in Partial Metric Spaces*, in preprint, (2022).
- [16] L. KEDIAN, L. SHOU AND G. YING, *On statistical convergence in cone metric spaces*, *Topology Appl.*, **196**, (2015), 641–651.
- [17] M. A. KHAMSI, *Generalized metric spaces: A survey*, *J. Fixed Point Theory Appl.*, **17**, 3 (2015), 455–475.
- [18] Ş. KÜÇÜK AND H. GÜMÜŞ, *The meaning of the concept of lacunary statistical convergence in G -metric spaces*, *Korean J. Math.*, **30**, (2022), 679–686.

- [19] M. MURSALEEN AND F. BAŞAR, *Sequence Spaces: Topics in Modern Summability Theory*, Series: Mathematics and Its Applications, CRP Press/Taylor & Francis Group, Boca Raton · London · New York (2020).
- [20] Z. MUSTAFA AND B. SIMS, *Some remarks concerning D -metric spaces*, In International Conferences on Fixed Point Theory and Application, Valencia, Spain, (2003), 189–198.
- [21] Z. MUSTAFA AND B. SIMS, *A new approach to generalized metric spaces*, J. Nonlinear Convex Anal., **7**, 2 (2006), 289–297.
- [22] F. NURAY, *Statistical convergence in 2-metric spaces*, J. Class. Anal., **16**, 2 (2020), 115–123.
- [23] F. NURAY, *Statistical convergence in partial metric spaces*, Korean J. Math., **30**, 1 (2022), 155–160.
- [24] E. SAVAŞ AND P. DAS, *A generalized statistical convergence via ideals*, Appl. Math. Lett., (2010), 826–830.
- [25] I. J. SCHOENBERG, *The integrability of certain functions and related summability methods*, Amer. Math. Monthly, **66**, (1959), 361–375.
- [26] S. SEDGHI, N. SHOBEAND AND A. ALIOUCHE, *A generalization of fixed point theorem in S -metric spaces*, Mat. Vesn., **64**, 3 (2012), 258–266.
- [27] H. STEINHAUS, *Sur la convergence ordinaire et la convergence asymptotique*, Colloq. Math., **2**, (1951), 73–74.
- [28] R. SUNAR, *Statistical convergence in A -metric spaces*, submitted for publication.
- [29] A. ZYGMUND, *Trigonometric Series*, Cambridge Univ. Press, Cambridge, 1979.