

SOME INCLUSION RELATIONS FOR WIJSMAN DEFERRED ALMOST STATISTICAL CONVERGENCE AND STRONGLY DEFERRED ALMOST CONVERGENCE OF SEQUENCE OF SETS

ÖMER KIŞI¹ AND RÜMEYSA AKBIYIK²

ABSTRACT. This study presents the notions of deferred almost convergence, strongly deferred almost convergence, and deferred almost statistical convergence for sequences of sets, exploring the connections among them. Furthermore, it establishes the notions of asymptotically deferred almost equivalence and asymptotically deferred almost statistical equivalence.

REFERENCES

- [1] R. P. Agnew, *On deferred Cesàro means*, Ann. Math. 33(3) (1932), 413–421.
- [2] N. Akin, E. DüNDAR, U. Ulusu, *Asymptotically lacunary $\mathcal{I}$ -invariant statistical equivalence of sequences of sets defined by a modulus function*, Sakarya Univ. J. Sci., 22(6) (2018), 1857–1862.
- [3] M. E. Alkan, F. Nuray, *Strongly deferred almost convergence and deferred almost statistical convergence*, Mathematica, 64(87)(2) (2022), 151–163.
- [4] J. Connor, *The statistical and strongly p -Cesàro convergence of sequences*, Analysis, 8 (1988), 47–63.
- [5] H. Fast, *Sur la convergence statistique*, Colloq. Math., 2 (3–4) (1951), 241–244.
- [6] H. Ş. Kandemir, M. Et and N. D. Aral, *Strongly λ -convergence of order α in neutrosophic normed spaces*, Dera Natung Govt. College Res. J., 7(1) (2022), 92–102.
- [7] Ö. Kişi, F. Nuray, *On $S_{\lambda}^L(\mathcal{I})$ -asymptotically statistical equivalence of sequences of sets*, ISRN Math. Anal., 2013 (2013), Article ID 602963, 6 pages.
- [8] C. Koşar, M. Küçükbaşlan and M. Et, *On asymptotically deferred statistical equivalence of sequences*, Filomat, 31 (2017), 5139–5150.
- [9] M. Küçükbaşlan, M. Yılmaztürk, *On deferred statistical convergence of sequences*, Kyungpook Math. J., 56 (2016), 357–366.
- [10] L. Leindler, *On the summability of Fourier series*, Acta Sci. Math. (Szeged), 29 (1968), 147–162.
- [11] G. G. Lorentz, *A contribution to the theory of divergent sequences*, Acta Math., 80 (1948), 167–190.
- [12] I. J. Maddox, *Elements of functional analysis*, Cambridge University Press, Cambridge, 1970.
- [13] I. J. Maddox, *A new type of convergence*, Math. Proc. Cambridge Philos. Soc., 83 (1978), 61–64.
- [14] M. Marouf, *Asymptotic equivalence and summability*, Int. J. Math. Math. Sci., 16 (1993), 755–762.
- [15] H. I. Miller, C. Orhan, *On almost convergent and statistically convergent subsequences*, Acta Math. Hungar., 93 (2001), 135–151.
- [16] F. Nuray, B. E. Rhoades, *Statistical convergence of sequences of sets*, Fasc. Math., 49 (2012), 87–99.

2020 *Mathematics Subject Classification.* 40A05, 40C05, 40D25.

Key words and phrases. Strongly deferred almost convergence, deferred statistical convergence, asymptotical equivalence.

- [17] F. Nuray, R. F. Patterson and E. & Dünder, *Asymptotically lacunary statistical equivalence of double sequences of sets*, Demonstr. Math., 49(2) (2016), 183–196.
- [18] R. F. Patterson, *On asymptotically statistical equivalent sequences*, Demonstr. Math., 36 (2003), 149–153.
- [19] I. P. Pobyvanets, *Asymptotic equivalence of some linear transformations, defined by a nonnegative matrix and reduced to generalized equivalence in the sense of Cesàro and Abel (in Russian)*, Mat. Fiz., 28 (1980), 83–87.
- [20] Ş. Tortop, E. Dünder, *Wijsman $\mathcal{I}_2$ -invariant convergence of double sequences of sets*, J. Inequal. Spec. Funct., 9(4) (2018), 90–100.
- [21] U. Ulusu, F. Nuray, *On asymptotically lacunary statistical equivalent set sequences*, J. Math., 2013 (2013), Article ID 310438, 5 pages.
- [22] R. A. Wijsman, *Convergence of sequences of convex sets, cones and functions II*, Trans. Amer. Math. Soc., 123(1) (1966), 32–45.
- [23] T. Yaying, *On Λ -Fibonacci difference sequence spaces of fractional order*, Dera Natung Govt. College Res. J., 6(1) (2021), 92–102.
- [24] T. Yaying, *Arithmetic continuity in cone metric space*, Dera Natung Govt. College Res. J., 5(1) (2020), 55–62.

Received 14 February 2025

^{1,2} DEPARTMENT OF MATHEMATICS, BARTIN UNIVERSITY, 74100, BARTIN, TURKEY
 Email address: ¹ okisi@bartin.edu.tr, ² rmysaakbyk@gmail.com