

THE STRONG LIMITED p -SCHUR PROPERTY IN BANACH LATTICES

H. ARDAKANI* AND KH. TAGHAVINEJAD

Abstract. The concept of the strong limited p -Schur property ($1 \leq p \leq \infty$); that is, spaces on which every weakly p -compact and almost limited set is relatively compact is introduced and studied. Next, the weak DP^* property of order p is defined and spaces with this property are characterized. As an application of these results, by the class of disjoint p -convergent operators, some characterizations of Banach lattices with the weak DP^* property of order p are given.

Mathematics subject classification (2020): Primary 46B42; Secondary 46B50, 47B65.

Keywords and phrases: Almost limited set, Schur property, weak DP^* property, weakly p -summable sequence, p -convergent operator.

REFERENCES

- [1] C. D. ALIPRANTIS AND O. BURKISHAW, *Positive Operators*, Pure and Applied Mathematics Series, Academic Press, New York and London, 1985.
- [2] H. ARDAKANI, S. M. MOSHTAGHIUN, S. M. S. MODARRES MOSADEGH AND M. SALIMI, *The strong Gelfand-Phillips property in Banach lattices*, Banach J. Math. Anal. **10** (2016), 15–26.
- [3] J. BORWEIN, M. FABIAN AND J. VANDERWERFF, *Characterizations of Banach spaces via convex and other locally Lipschitz functions*, Acta Math. Vietnam **22** (1997), 53–69.
- [4] J. CASTILLO AND F. SANCHEZ, *Dunford-Pettis-like Properties of Continuous Vector Function Spaces*, Revista Mathematica **6** (1993), 43–59.
- [5] J. X. CHEN, Z. L. CHEN AND G. X. JI, *Almost limited sets in Banach lattices*, J. Math. Anal. Appl. **412** (2014), 547–563.
- [6] M. B. DEGHANI, S. M. MOSHTAGHIUN AND M. DEGHANI, *On the limited p -Schur property of some operator spaces*, Int. J. Anal. Appl. **16** (2018), 50–61.
- [7] M. B. DEGHANI, S. M. MOSHTAGHIUN AND M. DEGHANI, *On the p -Schur property of Banach spaces*, Ann. Funct. Anal. **9** (2018), 123–136.
- [8] J. DIESTEL, *Sequences and Series in Banach Spaces*, Graduate Texts in Math. **92**, Springer-Verlag, Berlin, 1984.
- [9] J. DIESTEL, *Absolutely Summing Operators*, Cambridge University Press, 1995.
- [10] G. EMMANUELE, *On Banach spaces with the Gelfand-Phillips property, III*, J. Math. Pures Appl. **72** (1993), 327–333.
- [11] J. H. FOURIE AND E. D. ZEEKOEI, *DP^* -properties of order p on Banach spaces*, Quaest. Math. **37** (2014), 349–358.
- [12] A. EL. KADDOURI, M. MOUSSA, *About the class of ordered limited operators*, Acta Universitatis Carolinae, Mathematica et Physica **54** (2013), 37–43.
- [13] M. L. LOURENÇO AND V. C. C. MIRANDA, *The property (d) and almost limited completely continuous operators*, arXiv:2011.02890v1.
- [14] N. MACHRAFI, A. ELBOUR AND M. MOUSSA, *Some characterizations of almost limited sets and applications*, arXiv:1312.2770v1.
- [15] P. MEYER-NIEBERG, *Banach Lattices*, Universitext, Springer-Verlag, Berlin, 1991.
- [16] C. PALAZUELOS, E. A. SANCHEZ PEREZ AND P. TRADACETE, *Maurey-Rosenthal factorization for p -summing operators and Dodds-Fremlin domination*, J. Operator Theory. **68** (2012), 205–222.
- [17] J. A. SANCHEZ, *Positive Schur property in Banach lattices*, Extracta Mathematica **7** (1992), 161–163.

- [18] W. WNUK, *Banach lattices with properties of the Schur type*, A survey. Conf. Sem. Mat. Univ. Bari **249** (1993), 1–25.
- [19] W. WNUK, *On the dual positive Schur property in Banach lattices*, Positivity **2** (2012), 759–773.
- [20] E. ZEEKOEI AND J. FOURIE, *Classes of Dunford-Pettis-type operators with applications to Banach spaces and Banach lattices*, Ph.D. Thesis, 2017.