



Some Characterizations of Almost Sets in Banach Lattices

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Abstract

We obtain new characterizations of almost order Dunford-Pettis sets and investigate their applications to order weak compactness of operators in Banach lattices. In particular, we characterize when the adjoint operator is order weakly compact and when the image of a norm-bounded set under an order bounded operator is an almost order Dunford-Pettis set.

Keywords: Almost Dunford-Pettis set, almost order Dunford-Pettis set, disjointly weakly compact set, order weakly compact operator, KB space, Banach lattice.

References:

- [1] C. D. Aliprantis and O. Burkinshaw, Positive Operators. Springer, Dordrecht, 2006.
- [2] K. Bouras, Almost Dunford-Pettis sets in Banach lattices. Rend. Circ. Mat. Palermo (2) 62 (2013), no. 2, 227–236.
- [3] A. Elbour and K. Bouras, A note on the Dunford–Pettis completely continuous operators. Afr. Mat. 37 (2026), no. 1, Paper No. 35, 10 pp.
- [4] A. Elbour and F. Z. El Hilali, Some characterizations of almost order (L) sets and applications. Positivity 28 (2024), no. 4, Paper No. 63, 17 pp.