

Multi-norms

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Let E be a Banach space. A *multi-norm* based on E is a sequence

$$(\|\cdot\|_n : n \in \mathbb{N})$$

of norms, where $\|\cdot\|_n$ is defined on E^n , to satisfy certain axioms. The theory of multi-normed spaces is related to, but different from, the theory of operator spaces. It has strong connections with the theories of absolutely summing operators and of cross products on tensor products of spaces.

I shall review the theory, and discuss some of its applications. In particular I shall discuss the equivalence of multi-norms, multi-bounded operators, and applications to Banach lattices.

Details are given in the publications listed below.

References

- [1] O. Blasco, H. G. Dales, and H. L. Pham, ‘Equivalences involving (p, q) -multi-norms’, in preparation.
- [2] H. G. Dales and M. E. Polyakov, ‘Multi-normed spaces’, *Dissertationes Math.*, 488 (2012) 1–165.
- [3] H. G. Dales, M. Daws, H. L. Pham, and P. Ramsden, ‘Multi-norms and the injectivity of $L^p(G)$ ’, *J. London Math. Society* (2), 86 (2012) 779–809.
- [4] H. G. Dales, M. Daws, H. L. Pham, and P. Ramsden, ‘Equivalence of multi-norms’, *Dissertationes Math.*, to appear.