p-multinormed spaces

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Let $1 \le p \le \infty$ and X be a vector space. For every $n \in \mathbb{N}$, let $\|\cdot\|_n$ be a norm on X^n. The resulting sequence of norms is called a p-multinorm provided $\|A\bar{x}\|_m \le \|A\colon \ell_p^n \to \ell_p^m\|_n \cdot \|\bar{x}\|_n$ for every "multivector" $\bar{x} \in X^n$ and every $m \times n$ scalar matrix A. In the cases $p = 1$ and $p = \infty$, these spaces were introduced by Dales and Polyakov. These spaces were investigated by Pisier and others in the language of tensor norms on $\ell_p \otimes X$. In this talk, we we will discuss connections between p-multinormed spaces and Banach lattices. We will show that every Banach lattice has a "natural" p-multinorm, and that many p-multinormed spaces can be realized as a subspace of a Banach lattice. This is a joint work with G. Dales and N. Laustsen.