Albiac, Fernando; Ansorena, José L.
Uniqueness of unconditional basis of $\ell_2 \oplus T^{(2)}$. (English) [Zbl 07453367]

Summary: We provide a new extension of Pitt’s theorem for compact operators between quasi-Banach lattices which permits to describe unconditional bases of finite direct sums of Banach spaces $X_1 \oplus \cdots \oplus X_n$ as direct sums of unconditional bases of their summands. The general splitting principle we obtain yields, in particular, that if each $X_i$ has a unique unconditional basis (up to equivalence and permutation), then $X_1 \oplus \cdots \oplus X_n$ has a unique unconditional basis too. Among the novel applications of our techniques to the structure of Banach and quasi-Banach spaces we have that the space $\ell_2 \oplus T^{(2)}$ has a unique unconditional basis.

MSC:
46B15 Summability and bases; functional analytic aspects of frames in Banach and Hilbert spaces
46B20 Geometry and structure of normed linear spaces
46B42 Banach lattices
46B45 Banach sequence spaces
46A16 Not locally convex spaces (metrizable topological linear spaces, locally bounded spaces, quasi-Banach spaces, etc.)
46A35 Summability and bases in topological vector spaces
46A40 Ordered topological linear spaces, vector lattices
46A45 Sequence spaces (including Köthe sequence spaces)

Keywords:
uniqueness of structure; unconditional basis; equivalence of bases; quasi-Banach space; Banach lattice; Hardy spaces; Tsirelson space

Full Text: DOI

References:
[3] Albiac, Fernando; Ansorena, José L.; Wojtaszczyk, Przemyslaw, Uniqueness of unconditional basis of $\langle (H_p(\mathbb{N})) \oplus \ell_2 \rangle$ and $\langle (H_p(\mathbb{N})) \oplus \mathcal{M} \rangle$ for $(0<p<1)$ (2020)

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