On Banach lattices with the Schur type properties

by Witold Wnuk

Abstract. The theory of Banach lattices investigates four types of the Schur property. Namely, we say that a Banach lattice $E = (E, \|\cdot\|)$ has

- the Schur property, if $x_n \to 0$ weakly, then $\|x_n\| \to 0$,
- the positive Schur property, whenever $0 \leqslant x_n \to 0$ weakly implies $\|x_n\| \to 0$,
- the strong Schur property if there exists a number $K > 0$ such that for all $\delta \in (0, 2]$ every δ-separated sequence in the unit ball contains a subsequence $K\delta$-equivalent to the standard ℓ^1-basis,
- the dual positive Schur property, if $0 \leqslant f_n \to 0$ in the weak* topology, then $\|f_n\| \to 0$.

We will discuss various characterizations of properties mentioned above as well as examples of Banach lattices E having these properties. We will concentrate on conditions, related to the structure of E and operators on E, implying (or equivalent to) a suitable type of the Schur property.