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On a weak Freudenthal spectral theorem

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Abstract: Let X be an Archimedean Riesz space and $\mathcal{P}(X)$ its Boolean algebra of all band projections, and put $\mathcal{P}_e = \{Pe : P \in \mathcal{P}(X)\}$ and $\mathcal{B}_e = \{x \in X : x \wedge (e - x) = 0\}$, $e \in X^+$. X is said to have Weak Freudenthal Property (WFP) provided that for every $e \in X^+$ the lattice $lin\mathcal{P}_e$ is order dense in the principal band e^{dd}. This notion is compared with strong and weak forms of Freudenthal spectral theorem in Archimedean Riesz spaces, studied by Veksler and Lavrič, respectively. WFP is equivalent to X^+-denseness of $\mathcal{P}_e$ in $\mathcal{B}_e$ for every $e \in X^+$, and every Riesz space with sufficiently many projections has WFP (THEOREM).

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