

# A DECOMPOSITION PROBLEM ON COMPLEX BANACH LATTICES

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ABSTRACT. Let  $E \oplus F$  be a direct sum decomposition of a complex Banach lattice  $X$ . In [1], Garth Dales asked if the equation  $\|x + y\| = \| |x| \vee |y| \|$  for all  $x \in E$  and  $y \in F$  implies that  $E$  and  $F$  are bands. We will present Kalton's solution to this problem. To do this, we will use hermitian operators, central operators and Krivine's calculus. Finally we will introduce property (d) on complex Banach lattices, we will characterize order projections on complex Banach lattices in terms of hermitian projections. This also leads to a direct solution to Dales's problem for such spaces.

## REFERENCES

- [1] H. G. Dales, *A problem on direct sum decompositions*, Positivity, 13 (2009) 330.
- [2] N.J. Kalton, *Hermitian operators on complex Banach lattices and a problem of Garth Dales*, London Mathematical Society, 2012.

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