

The Banach Ball Property for the State Space of Order Unit Spaces

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ABSTRACT

In [1], Alfsen and Shultz have proved that the state space $S(A)$ of a JB-algebra A has the Hilbert ball property: for each pair ρ, σ of extreme points of $S(A)$, the face generated by ρ and σ is a norm-exposed face affinely isomorphic to the closed unit ball in some Hilbert space ([1], Corollary 3.12). Conversely, they have proved that the order unit space A being in spectral duality with its predual space is a JB-algebra if the state space of A has the Hilbert ball property ([1], Theorem 7.2). We define the Banach ball property for the state space of order unit spaces and study order unit spaces which have this property. Thus, we describe some class of order unit spaces, geometry of which is similar to geometry of JB-algebras. Due to this fact we can develop the theory of order unit spaces like the theory of Jordan Banach spaces and obtain new results.

Keywords: order unit space, homogeneous factor, state space, trace, Banach ball property, generalized spin factor, JB-algebra.