Geometric properties of Banach lattices related to fixed point property

Stanisław Prus

Institute of Mathematics, M. Curie-Skłodowska University, Lublin, Poland
`stanislaw.prus@umcs.lublin.pl`

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Many of geometric properties of Banach spaces have been successfully applied to metric fixed point theory. One of them is uniform nonsquareness. It implies existence of fixed points for nonexpansive mappings on bounded closed convex sets. We consider two geometric properties of Banach lattices related to order: uniform monotonicity and order uniform smoothness. The coefficients related to these properties are characteristic of monotonicity $\varepsilon_{0,m}(X)$ and the Riesz angle $\alpha(X)$, respectively. We discuss relations between the values of these coefficients and uniform nonsquareness. We define conditions which can be seen as combinations of uniform monotonicity and order uniform smoothness and show their applications to fixed point theory.