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Suns, moons, and $\bar{B}$-complete sets in asymmetric spaces. (English) Zbl 07563247

Summary: Classical concepts and problems of geometric approximation theory are considered in normed and asymmetric spaces. Relations between strict suns, sets with outer radially continuous (ORL continuous) metric projection, unimodal sets, $\bar{B}$-complete sets, and moons are studied. The concepts of a $B$-sun and a local $B$-sun in an asymmetric space are introduced (a set is called a $B$-sun if its intersection with any closed ball is either a sun or empty). We show that a unimodal local $B$-sun is a strict sun, construct an example of a Chebyshev set which is not a local $B$-sun, and prove that, for a local $B$-sun in an asymmetric space, the condition of ORL-continuity of the metric projection is equivalent to its strict solarity. Moreover, it is shown that in an asymmetric space a $\bar{B}$-sun with sequentially compact set of nearest points is a sun.

MSC: 41A65 Abstract approximation theory (approximation in normed linear spaces and other abstract spaces)

Keywords: approximation in asymmetric spaces; Sun; strict Sun; $B$-Sun; Moon; $\bar{B}$-complete set; unimodal set

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References: