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ON THE JAMES TYPE CONSTANT AND VON NEUMANN–JORDAN CONSTANT FOR A CLASS OF BANAŚ–FRĄCZIECK TYPE SPACES

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Abstract. As a generalization of Banaś-Frączieck space, the space $X_{\lambda,p}$ that denotes $\mathbb{R}^2$ endowed with the norm

$$\|x\|_{\lambda,p} = \max\{\lambda|x_1|, \|x\|_p\}$$

for $\lambda > 1$, $p \geqslant 1$ and $x = (x_1, x_2) \in \mathbb{R}^2$ is well defined. In this note, the exact value of the the James type constants $J_{X_{\lambda,p},t}(1)$ and von Neumann-Jordan constant $C_{NJ}(X_{\lambda,p})$ about this space for $p \geqslant 2$ are investigated.

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REFERENCES

[1] J. A. CLARKSON, *The von Neumann-Jordan constant for the Lebesgue space*, Ann. of Math., **38** (1937), 114–115.
[2] R. C. JAMES, *Uniformly nonsquare spaces*, Ann. of Math., **80** 1964, 542–550.
[3] J. GAO, K. S. LAU, *On two classes of Banach spaces with uniform normal structure*, Studia Math. **99**(1991), 41–56.
[4] Y. TAKAHASHI, *Some geometric constants of Banach spaces – a unified approach*, Banach and function spaces II, Yokohama Publ., Yokohama, (2008), 191–220.
[5] J. ALONSO, E. LLORENS-FUSTER, *Geometric mean and triangles inscribed in a semicircle in Banach spaces*, J. Math. Anal. Appl. **340** (2008), 1271–1283.
[6] J. BANAŚ AND K. FRĄCZEK, *Deformation of Banach spaces*, Comment. Math. Univ. Carolinae **34** (1993), no. 1, 47–53.
[7] C. YANG, *Jordan-von Neumann constant for Banaś-Frączek space*, Banach J. Math. Anal. **8** (2014), no. 2, 185–192.
[8] C. YANG, Y. WANG, *Some properties of James type constant*, Appl. Math. Lett. **25** (2012), 538–544.