

D-NORM AND ITS ISOMETRIES ON c_0 SPACES

ALI BAYATI ESHKAFTAKI

Abstract. In this paper, based on the notion of *diameter*, we consider a natural preorder on $c_0(I)$ which is said “diametric majorization”. Then by using this notion we define a norm on $c_0(I)$, where I is assumed to be an infinite set. This norm is equivalent to $\|\cdot\|_\infty$ and is said “d-norm”. Finally, the structures of all bounded linear operators on $c_0(I)$ preserving diametric majorization and also isometries under the d-norm are both determined. We also give the relation between this isometries and isometries under the usual norm.

Mathematics subject classification (2010): 46B04, 47B60.

Keywords and phrases: d-norm, d-isometry, diametric majorization.

REFERENCES

- [1] F. BAHRAMI, A. BAYATI ESHKAFTAKI, S. M. MANJEGANI, *Majorization on ℓ_∞ and on its closed linear subspace \mathfrak{c} , and their linear preservers*, *Linear Algebra Appl.* **437** (2012) 2340–2358.
- [2] A. BAYATI ESHKAFTAKI, N. EFTEKHARI, *Convex majorization on discrete $\ell^p(I)$ spaces*, *Linear Algebra Appl.* **474** (2015) 124–140.
- [3] R. J. FLEMING, J. E. JAMISON, *Isometries on Banach Spaces: Function Spaces*, CRC Press, Boca Raton, FL, 2003.
- [4] R. J. FLEMING, J. E. JAMISON, *Isometries on Banach Spaces: Vector-Valued Function Spaces and Operator Spaces*, CRC Press, Boca Raton, FL, 2007.
- [5] N. J. GAL, J. JAMISON, *Isometries and isometric equivalence of hermitian operators on $A^{1-p}(X)$* , *J. Math. Anal. Appl.* **339** (2008) 225–239.
- [6] A. M. HASANI, M. RADJABALIPOUR, *On linear preservers of (right) matrix majorization*, *Linear Algebra Appl.* **423** (2007) 255–261.
- [7] F. KHALOOEI, A. SALEMI, *The structure of linear preservers of left matrix majorizations on \mathbb{R}^p* , *Electronic Journal of Linear Algebra* **18** (2009) 88–97.
- [8] L. LI, R. WANG, *Surjective isometries on the vector-valued differentiable function spaces*, *J. Math. Anal. Appl.* **427** (2015) 547–556.
- [9] M. LJUBENOVIC, D. S. DJORDJEVIC, *Linear preservers of weak majorization on $\ell^1(I)^+$ when I is an infinite set*, *Linear Algebra Appl.* **517** (2017) 177–198.