

A GENERALIZATION OF MERCER'S RESULT ON CONVEX FUNCTIONS, II

MAREK NIEZGODA

Abstract. In this paper, we apply Jensen's inequality and two kinds of majorization for matrices in order to generalize some recent results on Mercer's inequality for convex functions.

Mathematics subject classification (2010): 26A51, 26D15, 06F20.

Keywords and phrases: Convex function, Jensen's inequality, Mercer's inequality, majorization, doubly stochastic matrix, column stochastic matrix.

REFERENCES

- [1] W. W. BRECKNER AND T. TRIF, *Convex Functions and Related Functional Equations: Selected Topics*, Cluj University Press, Cluj, 2008.
- [2] W. S. CHEUNG, A. MATKOVIĆ AND J. PEČARIĆ, *A variant of Jensen's inequality and generalized means*, J. Ineq. Pure & Appl. Math. **7**, (1) (2006), Article 10.
- [3] G. DAHL, *Matrix majorization*, Linear Algebra Appl., **288**, (1999), 53–73.
- [4] A. GUESSAB, *Direct and converse results for generalized multivariate Jensen-type inequalities*, J. Nonlinear Convex Anal. **13**, (4) (2012), 777–797.
- [5] G. M. HARDY, J. E. LITTLEWOOD AND G. PÓLYA, *Inequalities*, 2nd Ed., Cambridge University Press, Cambridge, 1952.
- [6] A. W. MARSHALL, I. OLKIN AND B. C. ARNOLD, *Inequalities: Theory of Majorization and Its Applications*, Second Edition, Springer, New York, 2011.
- [7] A. MATKOVIĆ AND J. PEČARIĆ, *A variant of Jensen's inequality for convex functions of several variables*, J. Math. Ineq. **1**, (1) (2007), 45–51.
- [8] A. MATKOVIĆ, J. PEČARIĆ AND I. PERIĆ, *Refinements of Jensen's inequality of Mercer's type for operator convex functions*, Math. Ineq. Appl. **11**, (1) (2008), 113–126.
- [9] A. MCD. MERCER, *A variant of Jensen's inequality*, J. Ineq. Pure & Appl. Math. **4**, (4) (2003), Article 73.
- [10] M. NIEZGODA, *A generalization of Mercer's result on convex functions*, Nonlinear Anal.: Theory Methods Appl., **71**, (2009), 2771–2779.
- [11] M. NIEZGODA, *Vector majorization and Schur-concavity of some sums generated by the Jensen and Jensen-Mercer functionals*, Math. Inequal. Appl., **18**, 2 (2015), 769–786.
- [12] Z. PAVIĆ, *The applications of functional variants of Jensen's inequality*, J. Function Spaces Appl., Article ID 194830 (2013), 5 pages.
- [13] Z. PAVIĆ, *Generalizations of Jensen-Mercer's inequality*, J. Pure Appl. Math. Adv. Appl., **11**, (1) (2014), 19–36.
- [14] F. D. PERIA, P. G. MASSEY AND L. E. SILVESTRE, *Weak matrix majorization*, Linear Algebra Appl. **403**, (2005), 343–368.