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GENERALIZATION ON KANTOROVICH INEQUALITY

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Abstract. In this paper, we provide a new form of upper bound for the converse of Jensen's inequality. Thereby, known estimations of the difference and ratio in Jensen's inequality are essentially improved. As an application, we also obtain an improvement of Kantorovich inequality.

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REFERENCES

[1] KY FAN, *Some matrix inequalities*, Abh. Math. Sem. Univ. Hamburg **29** (1966), 185–196.
[2] M. FUJII, T. FURUTA, R. NAKAMOTO AND S. E. TAKAHASHI, *Operator inequalities and covariance in noncommutative probability*, Math. Japon. **46** (1996), 317–320.
[3] M. FUJII, S. IZUMINO, R. NAKAMOTO AND Y. SEO, *Operator inequalities related to Cauchy-Schwarz and Hölder-McCarthy inequalities*, Nihonkai Math. J. **8** (1997), 117–122.
[4] M. FUJII, J. MIĆIĆ, J. E. PEČARIĆ AND Y. SEO, *Recent Developments of Mond-Pečarić Method in Operator Inequalities*, Element, Zegreb, 2012, In Print.
[5] M. FUJII, R. NAKAMOTO AND Y. SEO, *Covariance in Bernstein's inequality for operators*, Nihonkai Math. J. **8** (1997), 1–6.
[6] J. I. FUJII AND Y. SEO, *Determinant for positive operators*, Sci. Math. **1** (1998), 153–156.
[7] T. FURUTA, *Extensions of Hölder-McCarthy and Kantorovich inequalities and their applications*, Proc. Japan Acad. Ser. A Math. Sci. **73** (1997), 38–41.
[8] T. FURUTA, *Operator inequalities associated with Hölder-McCarthy and Kantorovich inequalities*, J. Inequal. Appl. **2** (1998), 137–148.
[9] T. FURUTA, J. MIĆIĆ, J. E. PEČARIĆ AND Y. SEO, *Mond-Pečarić Method in Operator Inequalities*, Monographs in Inequalities **1**, Element, Zegreb, 2005.
[10] S. IZUMINO AND Y. SEO, *Ozeki's inequality and noncommuative covariance*, Nihonkai Math. J. **8** (1997), 55–58.
[11] Z. LIU, K. WANG, AND C. XU, *A note on Kantorovich inequality for Hermite matrices*, J. Inequal Appl. (2011), Artical ID 245767, 1–6.
[12] Y. SEO, *Operator convexity and its applications to operator inequalities*, Doctoral dissertation: Niigata University, 1999.
[13] Y. SEO, *Variance in noncommuative probability*, Math. Japon. **46**, 3 (1997), 439–444.

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