AN EXTENSION OF ORDER PRESERVING OPERATOR INEQUALITY

TAKAYUKI FURUTA

Abstract. We discuss an order preserving operator inequality and also we transform it into log majorization.

Mathematics subject classification (2010): 47A63.
Keywords and phrases: Löwner-Heinz inequality, order preserving operator inequality, log majorization.

REFERENCES

[1] T. ANDO AND F. HIAI, *Log majorization and complementary Golden-Thompson type inequalities*, Linear Alg. and Its Appl., **197, 198** (1994), 113–131.
[2] R. BHATIA, *Positive Definite Matrices*, Princeton Univ. Press, 2007.
[3] M. FUJII, *Furuta's inequality and its mean theoretic approach*, J. Operator Theory, **23** (1990), 67–72.
[4] M. FUJII AND E. KAMEI, *Mean theoretic approach to the grand Furuta inequality*, Proc. Amer. Math. Soc., **124** (1996), 2751–2756.
[5] M. FUJII, A. MATSUMOTO AND R. NAKAMOTO, *A short proof of the best possibility for the grand Furuta inequality*, J. of Inequal. and Appl., **4** (1999), 339–344.
[6] T. FURUTA, $A \geqslant B \geqslant 0$ *assures* $(B^r A^p B^r)^{1/q} \geqslant B^{(p+2r)/q}$ *for* $r \geqslant 0, p \geqslant 0, q \geqslant 1$ *with* $(1+2r)q \geqslant p + 2r$, Proc. Amer. Math. Soc., **101** (1987), 85–88.
[7] T. FURUTA, *Elementary proof of an order preserving inequality*, Proc. Japan Acad., **65** (1989), 126.
[8] T. FURUTA, *An extension of the Furuta inequality and Ando-Hiai log majorization*, Linear Alg. and Its Appl., **219** (1995), 139–155.
[9] T. FURUTA, *Simplified proof of an order preserving operator inequality*, Proc, Japan Acad., **74** (1998), 114.
[10] T. FURUTA, *Invitation to Linear Operators*, Taylor & and Francis, **2001**, London.
[11] T. FURUTA AND D. WANG, *A decreasing operator function associated with the Furuta inequality*, Proc. Amer. Math. Soc., **126** (1998), 2427–2432.
[12] T. FURUTA, M. YANAGIDA AND T. YAMAZAKI, *Operator functions implying Furuta inequality*, Math. Inequal. Appl., **1** (1998), 123–130.
[13] E. HEINZ, *Beiträge zur Störungstheorie der Spektralzerlegung*, Math. Ann., **123** (1951), 415–438.
[14] E. KAMEI, *A sattelite to Furuta's inequality*, Math. Japon., **33** (1988), 883–886.
[15] E. KAMEI, *Parametrized grand Furuta inequality*, Math. Japon., **50** (1999), 79–83.
[16] F. KUBO AND T. ANDO, *Means of positive linear operators*, Math. Ann., **246** (1980), 205–224.
[17] K. LÖWNER, *Über monotone MatrixFunktionen*, Math. Z., **38** (1934), 177–216.
[18] G. K. PEDERSEN, *Some operator monotone functions*, Proc. Amer. Math. Soc., **36** (1972), 309–310.
[19] K. TANAHASHI, *Best possibility of the Furuta inequality*, Proc. Amer. Math. Soc., **124** (1996), 141–146.
[20] K. TANAHASHI, *The best possibility of the grand Furuta inequality*, Proc. Amer. Math. Soc., **128** (2000), 511–519.
[21] T. YAMAZAKI, *Simplified proof of Tanahashi's result on the best possibility of generalized Furuta inequality*, Math. Inequal. Appl., **2** (1999), 473–477.

ⓒ ELEMENT, Zagreb
Paper MIA-13-04

Mathematical Inequalities & Applications
www.ele-math.com
mia@ele-math.com