n–EXPONENTIAL CONVEXITY OF
HARDY–TYPE AND BOAS–TYPE FUNCTIONALS

SAJID IQBAL, KRISTINA KRULIĆ HIMMELREICH,
JOSIP PEČARIĆ AND DORA POKAZ

Abstract. In this paper, we discuss and prove n-exponential convexity of the linear functionals obtained by taking the positive difference of Hardy-type and Boas-type inequalities. Also, we give some examples related to our main results.

Mathematics subject classification (2010): 26D15, 26D10, 26D99.

Keywords and phrases: Hardy-type inequalities, Boas-type inequality, convex function, linear functionals, n-exponentially convexity, divided difference.

REFERENCES

[1] S. N. BERNSTEIN, *Sur les fonctions absolument monotones*, Acta Math. **52** (1929), 1–66.

[2] R. P. BOAS, *Some integral inequalities related to Hardy's inequality*, J. Anal. Math. **23** (1970), 53–63.

[3] A. ČIŽMEŠIJA, K. KRULIĆ, AND J. PEČARIĆ, *On a new class of refined discrete Hardy-type inequalities*, Banach J. Math. Anal. **4** (2010), 122–145.

[4] A. ČIŽMEŠIJA, J. PEČARIĆ, D. POKAZ, *A new general Boas-type inequality and related Cauchy means*, Math. Inequal. Appl. **15**(3) (2012), 599–617.

[5] N. ELEZOVIĆ, K. KRULIĆ, J. PEČARIĆ, *Bounds for Hardy type differences*, Acta Math. Sinica, (Engl. Ser.), **27** (4) (2011), 671–684.

[6] S. IQBAL, J. PEČARIĆ, Y. ZHOU, *Generalization of an inequality for integral transforms with kernel and related results*, J. Inequal. Appl., vol. 2010. Article ID 948430, 2010.

[7] S. IQBAL, K. KRULIĆ AND J. PEČARIĆ, *On an inequality for convex function with some applications of fractional integrals and fractional derivatives*, J. Math. Inequal. Volume 5, Number 2 (2011), 219–230.

[8] S. KAIJSER, L. NIKOLOVA, L.-E. PERSSON, AND A. WEDESTIG, *Hardy type inequalities via convexity*, Math. Inequal. Appl. **8** (3) (2005), 403–417.

[9] K. KRULIĆ, J. PEČARIĆ, L. E. PERSSON, *Some new Hardy-type inequalities with general kernels*, Math. Inequal. Appl., **12** (2009), 473–485.

[10] D. S. MITRINOVIĆ, J. PEČARIĆ AND A. M. FINK, *Classical and new inequalities in analysis*, Kluwer Academic Publisher, 1993.

[11] D. S. MITRINOVIĆ, J. E. PEČARIĆ, *On some Inequalities for Monotone Functions*, Boll. Unione. Mat. Ital. **(7)** 5–13, 407–416, 1991.

[12] C. NICULESCU AND L.-E. PERSSON, *Convex functions and their applications. A contemporary approach*, CMC Books in Mathematics, Springer, New York, 2006.

[13] J. PEČARIĆ, J. PERIĆ, *Improvements of the Giaccardi and the Petrović inequality and related results*, An. Univ. Craiova Ser. Mat. Inform., **39 (1)** (2012), 65–75.

[14] J. PEČARIĆ, F. PROSCHAN AND Y. L. TONG, *Convex functions, partial orderings and statistical applications*, Academic Press, New York, 1992.

[15] D. V. WIDDER, *The Laplace transform*, Princeton Uni. Press, New Jersey, 1941.

[16] D. V. Widder, *Necessary and sufficient condition for the representation of a function by a doubly infinite Laplace integral*, Trans. Amer. Math. Soc., 40 (1934, 321–326.) Princeton Uni. Press, New Jersey, 1941.

Journal of Mathematical Inequalities
www.ele-math.com
jmi@ele-math.com