

ON A HALF-DISCRETE MULHOLLAND-TYPE INEQUALITY

BICHENG YANG AND WING-SUM CHEUNG

Abstract. By means of weight functions and Hadamard's inequality, a half-discrete Mulholland-type inequality with a best constant factor is given. A best extension with multi-parameters, some equivalent forms as well as the operator expressions are also considered.

Mathematics subject classification (2010): 26D15, 47A07.

Keywords and phrases: Mulholland-type inequality, weight function, equivalent form.

REFERENCES

- [1] G. H. HARDY, J. E. LITTLEWOOD, G. PÓLYA, *Inequalities*, Cambridge University Press, Cambridge, 1934.
- [2] D. S. MITRINOVIĆ, J. E. PEČARIĆ, A. M. FINK, *Inequalities involving functions and their integrals and derivatives*, Kluwer Academic Publishers, Boston, 1991.
- [3] B. YANG, *Hilbert-type integral inequalities*, Bentham Science Publishers Ltd., 2009.
- [4] B. YANG, *Discrete Hilbert-type inequalities*, Bentham Science Publishers Ltd., 2011.
- [5] B. YANG, *An extension of Mulholland's inequality*, Jordan Journal of Mathematics and Statistics **3**, 3 (2010), 151–157.
- [6] B. YANG, *On Hilbert's integral inequality*, Journal of Mathematical Analysis and Applications **220** (1998), 778–785.
- [7] B. YANG, *The norm of operator and Hilbert-type inequalities*, Science Press, Beijing, 2009 (China).
- [8] B. YANG, I. BRNETIĆ, M. KRNIĆ, J. PEČARIĆ, *Generalization of Hilbert and Hardy-Hilbert integral inequalities*, Math. Ineq. and Appl. **8**, 2 (2005), 259–272.
- [9] M. KRNIĆ, J. PEČARIĆ, *Hilbert's inequalities and their reverses*, Publ. Math. Debrecen **67**, 3–4 (2005), 315–331.
- [10] J. JIN, L. DEBNATH, *On a Hilbert-type linear series operator and its applications*, Journal of Mathematical Analysis and Applications **371** (2010), 691–704.
- [11] L. AZAR, *On some extensions of Hardy-Hilbert's inequality and Applications*, Journal of Inequalities and Applications **2009**, no. 546829.
- [12] B. YANG, T. RASSIAS, *On the way of weight coefficient and research for Hilbert-type inequalities*, Math. Ineq. Appl. **6**, 4 (2003), 625–658.
- [13] B. ARPAD, O. CHOONGHONG, *Best constant for certain multilinear integral operator*, Journal of Inequalities and Applications **2006**, no. 28582.
- [14] J. KUANG, L. DEBNATH, *On Hilbert's type inequalities on the weighted Orlicz spaces*, Pacific J. Appl. Math. **1**, 1 (2007), 95–103.
- [15] W. ZHONG, *The Hilbert-type integral inequality with a homogeneous kernel of Lambda-degree*, Journal of Inequalities and Applications **2008**, no. 917392.
- [16] Y. LI, B. HE, *On inequalities of Hilbert's type*, Bulletin of the Australian Mathematical Society **76**, 1 (2007), 1–13.
- [17] B. YANG, *A mixed Hilbert-type inequality with a best constant factor*, International Journal of Pure and Applied Mathematics **20**, 3 (2005), 319–328.
- [18] B. YANG, *A half-discrete Hilbert's inequality*, Journal of Guangdong University of Education **31**, 3 (2011), 1–7.
- [19] J. KUANG, *Applied inequalities*, Shangdong Science Technic Press, Jinan, 2004 (China).
- [20] J. KUANG, *Introduction to real analysis*, Hunan Education Press, Chansha, 1996 (China).