REFINED MULTIDIMENSIONAL HARDY-TYPE INEQUALITIES VIA SUPERQUADRACITY

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Dedicated to Professor Josip Pečarić

Submitted by José M. Isidro

ABSTRACT. Some new refined multidimensional Hardy-type inequalities for $p \geq 2$ and their duals are derived and discussed. Moreover, these inequalities hold in the reversed direction when $1 < p \leq 2$. The results obtained are based mainly on some new results for superquadratic and subquadratic functions. In particular, our results further extend the recent results in [J.A. Oguntuase and L.-E. Persson, Refinement of Hardy's inequalities via superquadratic and subquadratic functions, J. Math. Anal. Appl., 339 (2008), no. 2, 1305– 1312] to a multidimensional setting.

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