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ON WEIGHTED INTEGRAL AND DISCRETE OPIAL–TYPE INEQUALITIES

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Abstract. In this paper some multidimensional integral and discrete Opial-type inequalities due to Agarwal, Pang and Sheng are considered. Theirs generalizations and extensions using submultiplicative convex functions, appropriate integral representations of functions, appropriate summation representations of discrete functions and inequalities involving means are presented.

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REFERENCES

[1] R. P. AGARWAL AND P. Y. H. PANG, *Remarks on the generalization of Opial's inequality*, J. Math. Anal. Appl., **190** (1995), 559–577.
[2] R. P. AGARWAL AND P. Y. H. PANG, *Sharp discrete inequalities in n independent variables*, Appl. Math. Comp., **72** (1995), 97–112.
[3] R. P. AGARWAL AND P. Y. H. PANG, *Opial Inequalities with Applications in Differential and Difference Equations*, Kluwer Academic Publishers, Dordrecht, Boston, London, 1995.
[4] R. P. AGARWAL, J. PEČARIĆ AND I. BRNETIĆ, *Improved integral inequalities in n independent variables*, Computers Math. Applic., **33**, 8 (1997), 27–38.
[5] R. P. AGARWAL, J. PEČARIĆ AND I. BRNETIĆ, *Improved discrete inequalities in n independent variables*, Appl. Math. Lett., **11**, 2 (1998), 91–97.
[6] R. P. AGARWAL AND Q. SHENG, *Sharp integral inequalities in n independent variables*, Nonlinear Anal., **26** (1996), 179–210.
[7] I. BRNETIĆ AND J. PEČARIĆ, *Some new Opial-type inequalities*, Math. Inequal. Appl., **1**, 3 (1998), 385–390.
[8] J. GUSTAVSSON, L. MALIGRANDA AND J. PEETRE, *A submultiplicative function*, Nederl. Akad. Wetensch. Indag. Math., **51**, 4 (1989), 435–442.
[9] D. S. MITRINOVIĆ, J. PEČARIĆ AND A. M. FINK, *Inequalities Involving Functions and Their Integrals and Derivatives*, Kluwer Academic Publishers, Dordrecht, 1991.
[10] Z. OPIAL, *Sur une inégalité*, Ann. Polon. Math., **8** (1960), 29–32.

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