

SHARP INTEGRAL INEQUALITIES FOR C-MONOTONE FUNCTIONS OF SEVERAL VARIABLES

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Abstract. Some sharp integral inequalities for C-monotone functions of several variables are proved. All cases of equality are found and some related results are pointed out and discussed.

Mathematics subject classification (1991): 26D15, 26D07.

Key words and phrases: Inequalities, integral inequalities, multidimensional, C-monotone functions, best constants, sharpness.

REFERENCES

- [1] S. BARZA, J. PECARIC AND L. E. PERSSON, *Reversed Hölder inequalities for monotone functions of several variables*, Math. Nachr. **186** (1997), 67-80.
- [2] J. BERGH, V. I. BURENKOV AND L. E. PERSSON, *Best constants in reversed Hardy's inequalities for quasimonotone functions*, Acta Sci. Math. (Szeged) **59** (1994), 221-239.
- [3] J. BERGH, V. I. BURENKOV AND L. E. PERSSON, *On some sharp reversed Hölder and Hardy type inequalities*, Math. Nachr. **169** (1994), 19-29.
- [4] V. I. BURENKOV, *On the best constant in Hardy's inequality for $0 < p < 1$* , Trudy Mat. Instit. im V. A. Steklova **194** (1992), 58-62(in Russian).
- [5] R. J. BUSHELL AND W. OKRASINSKI, *Volterra equations with convolution kernel*, J. London Math. Soc. **41** (1990), 503-510.
- [6] A. GARCIA DEL AMO, *On reverse Hardy's inequality*, Collectanea Math. **44** (1993), 115-123.
- [7] F. W. GEHRING, *The L^p -integrability of the partial derivatives of quasiconformal mapping*, Acta Math. **130** (1973), 265-277.
- [8] G. H. HARDY, J. E. LITTLEWOOD AND G. PO'LYA, *Inequalities*, Cambridge Univ. Press, 1952.
- [9] H. HEINIG AND L. MALIGRANDA, *Weighted inequalities for monotone and concave functions*, Studia Math. **116** (2) (1995), 133-165.
- [10] G. G. LORENTZ, *Some new functional spaces*, Ann. of Math. **51** (1950), 37-55.
- [11] W. G. MAZIA, *Einbettungssätze für Sobolewsche Raume I*, Teubner, Leipzig, 1979.
- [12] B. MUCKENHOUPT, *Weighted norm inequalities for the Hardy maximal function*, Trans. Amer. Math. Soc. **165**(1972), 207-226.
- [13] J. PECARIC AND L. E. PERSSON, *On Bergh's inequality for quasi-monotone functions*, J. Math. Anal. Appl. **195** (1995), 393-400.
- [14] J. PECARIC, I. PERIC AND L. E. PERSSON, *A multidimensional integral inequality for monotone functions of several variables*, Acta Sci. Math. (Szeged) **62** (1996), 407-412.
- [15] J. PECARIC, I. PERIC AND L. E. PERSSON, *Integral inequalities for monotone functions*, J. Math. Anal. Appl. **215** (1997), 235-251.
- [16] J. PECARIC, I. PERIC AND L. E. PERSSON, *Sharpness of some integral inequalities*, Research report 1998:5, Dept. of Math., Luleå University of Technology, ISSN 1400-4003 (19 pages), (submitted).
- [17] E. STEIN AND G. WEISS, *Introduction to Fourier Analysis on Euclidean Spaces*, Princeton Univ. Press, Princeton, New Jersey, 1971.
- [18] W. WALTER AND V. WECKESSER, *An integral inequality of convolution type*, Aeq. Math. **46** (1993), 212-219.