

## ON THE MAXIMUM PRINCIPLE FOR ELLIPTIC OPERATORS

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*Abstract.* In this paper we obtain some estimates for solutions of second order elliptic equations whose leading coefficients are functions of vanishing mean oscillation.

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### REFERENCES

- [1] A. D. ALEKSANDROV, *Majorization of solutions of second-order linear equations*, Vestnik Leningrad. Univ. **21** no. 1 (1966), 5–25 [English Translation in Amer. Math. Soc. Transl. **68** (1968), 120–143].
- [2] H. BERESTYCKI, L. NIRENBERG, S. R. S. VARADHAN, *The principal eigenvalue and maximum principle for second-order elliptic operators in general domains*, Comm. Pure Appl. Math. **47** (1994), 47–92.
- [3] X. CABRÉ, *On the Alexandroff - Bakelman - Pucci estimate and the reversed Hölder inequality for solutions of elliptic and parabolic equations*, Comm. Pure Appl. Math. **48** (1995), 539–570.
- [4] F. CHIARENZA, M. FRASCA, P. LONGO, *Interior  $W^{2,p}$  estimates for non divergence elliptic equations with discontinuous coefficients*, Ricerche Mat. **40** (1991), 149–168.
- [5] D. GILBARG, N. S. TRUDINGER, *Elliptic Partial Differential Equations of Second Order*, 2nd Edition, Springer, Berlin-Heidelberg (1983).
- [6] D. GRECO, *Nuove formole integrali di maggiorazione per le soluzioni di un'equazione lineare di tipo ellittico ed applicazioni alla teoria del potenziale*, Ricerche Mat. **5** (1956), 126–149.
- [7] A. I. KOSHELEV, *On boundedness in  $L^p$  of solutions of elliptic differential equations*, Mat. Sbornik **38** (1956), 359–372.
- [8] C. MIRANDA, *Sulle equazioni ellittiche del secondo ordine a coefficienti discontinui*, Ann. Mat. Pura Appl. (4) **63** (1963), 353–386.
- [9] C. PUCCI, *Operatori ellittici estremanti*, Ann. Mat. Pura Appl. (4) **71** (1966), 141–170.
- [10] C. PUCCI, *Limitazioni per soluzioni di equazioni ellittiche*, Ann. Mat. Pura Appl. (4) **74** (1966), 15–30.
- [11] E. M. STEIN, *Harmonic Analysis: Real Variable Methods, Orthogonality, and Oscillatory Integrals*, Princeton University Press, Princeton (1993).
- [12] M. TRANSIRICO, M. TROISI, *Equazioni ellittiche del secondo ordine di tipo non variazionale in aperti non limitati*, Ann. Mat. Pura Appl. (4) **152** (1988), 209–226.
- [13] M. TRANSIRICO, M. TROISI, A. VITOLO, *Spaces of Morrey type and elliptic equations in divergence form on unbounded domains*, Boll. Un. Mat. Ital. (7) **9B** (1995), 153–174.
- [14] M. TRANSIRICO, M. TROISI, A. VITOLO, *BMO spaces on domains of  $\mathbb{R}^n$* , Ricerche Mat. **45** (1996), 355–378.
- [15] C. VITANZA, *A new contribution to the  $W^{2,p}$ -regularity for a class of elliptic second order equations with discontinuous coefficients*, Matematiche (Catania) **48** (1993), 287–296.
- [16] A. VITOLO, *Uniqueness estimates for elliptic equations with discontinuous coefficients on unbounded domains*, manuscript.
- [17] W. P. ZIEMER, *Weakly Differentiable Functions*, Springer, Berlin (1989).