TWO–WEIGHT CACCIOPPOLI–TYPE ESTIMATES AND WEAK REVERSE HÖLDER INEQUALITIES FOR $\mathscr{A}$ –HARMONIC TENSORS

Gao Hongya and Hou Lanru

Abstract. In this paper, we first introduce a new weight–$A_r^{\lambda_3}(\lambda_1,\lambda_2,\Omega)$-weight, and then prove the two-weight Caccioppoli-type estimates and the two-weight weak reverse Hölder inequalities for $\mathscr{A}$-harmonic tensors, which can be regarded as generalizations of the classical results.

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REFERENCES

[1] J. M. Ball, *Convexity conditions and existence theorems in nonlinear elasticity*, Arch. Rational Mech. Anal. **63** (1977), 337–403.

[2] J. M. Ball and F. Murat, $W^{1,p}$ *-quasi-convexity and varitional problems for multiple integrals*, J. Funct. Anal. **58** (1984), 225–253.

[3] S. Ding, *Weighted Hardy-Littlewood inequality for $\mathscr{A}$-harmonic tensors*, Proc. Amer. Math. Soc., **125**(1997), 1727–1735.

[4] J. B. Garnett, *Bounded Analytic Functions*, New York: Academic Press, 1970. (1981 edition).

[5] J. Heinonen, T. Kilpelainen and O. Martio, *Nonlinear potential theory of degenerate elliptic equations*, Clarendon Press, Oxford, 1993.

[6] T. Iwaniec, *p-harmonic tensors and quasiregular mappings*, Ann. of Math., **136** (1992), 589–624.

[7] T. Iwaniec and A. Lutoborski, *Integral estimates for null Lagranggians*, Arch. Ration Meck. Anal., **125** (1993), 25–79.

[8] T. Iwaniec and G. Martin, *Quasiregular mappings in even dimensions*, Acta Math. **170** (1993), 29–81.

[9] C. A. Nolder, *Hardy-Littlewood theorems for A-harmonic tensors*, Illinois J. of Math, 43(1999), 613–631.

[10] C. A. Nolder, *A characterization of certain measures using quasiconformal mappings*, Proc. Amer. Math. Soc., Vol. 109, **2** (1990), 349–456.

[11] C. A. Nolder, *A quasiregular analogue of theorem of Hardy and Littlewood*, Trans. Amer. Math. Soc. Vol. 331, **1** (1992), 215–226.

[12] B. Stroffolini, *On weakly $\mathscr{A}$-harmonic tensors*, Studia Math., Vol. 3, **114** (1995), 289–301.

[13] S. Ding, *New weighted integral inequalities for differential forms in some domains*, Pacific J. of Math. Vol. **194** (1), 43–56. No. 1, 2000.

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