

## A WEAK POINCARÉ–SOBOLEV INEQUALITY FOR FUNCTIONS IN MORREY SPACES

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*Abstract.* We prove a weak Poincaré–Sobolev type inequality for a function belonging to Morrey spaces with respect to a Hausdorff content.

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### REFERENCES

- [1] D. R. ADAMS, *A note on Choquet integrals with respect to Hausdorff capacity*, in Functions spaces and Applications, Lund 1986, Lecture Notes in Math. 1302, Springer–Verlag, 1988, pp. 115–184.
- [2] D. R. ADAMS, *Choquet integrals in potential theory*, Publ. Mat., 42 no. 1(1998) 3–66.
- [3] D. R. ADAMS, *A note on Riez Potentials*, Duke Mat. J. Vol 42. no. 4 (1978) 765–778.
- [4] V. I. BURENKOV, H. V. GULIYEV, *Necessary and sufficient conditions for boundedness of the maximal operator in the local Morrey-type spaces*, Studia Mathematica, 163 (2) (2004), 157–176.
- [5] V. I. BURENKOV, H. V. GULIYEV, V. S. GULIYEV, *Necessary and sufficient conditions for boundedness of the Riesz potential in the local Morrey-type spaces*, Doklady Ross. Akad. Nauk, (412) (2007), 1–5.
- [6] F. CHIARENZA, M. FRASCA, *Morrey spaces and Hardy-Littlewood maximal operator*, Rend. Math. 7 (1987), 273–279.
- [7] M. ESSOH, I. FOFANA, K. KONIN, *Inégalités de type faible pour l'opérateur maximal fractionnaire dans les espaces de Morrey par rapport à la capacité de Hausdorff*, Italian Journal of pure and applied mathematic, no. 28 (2011), 81–92.
- [8] L. C. EVANS AND R. F. GARIEPY, *Measure theory and fine properties of functions*, CCR Press, 1992.
- [9] D. GILBARG AND N. S. TRUDINGER, *Elliptic Partial Differential Equations of Second Order*, Springer-Verlag 1983.
- [10] A. KUFNER, O. JOHN, F. FUCIK, *Functions spaces*, Noordhoff Int. Pub. 1977 Prague.
- [11] J. MALÝ, *Lectures on change of variables in integral*, Graduate School in Helsinki, 2001.
- [12] E. M. STEIN, *Singular Integral and Differentiability Properties of Functions*, Princeton, New Jersey, 1975.
- [13] G. V. WELLAND, *Weighted Norm Inequalities for Fractionnal Integrals*, Proc. Am. Math. Soc. Vol 51, no. 1 Aug. 1975.
- [14] W. P. ZIEMER, *Weakly Differentiable Functions*, Springer-Verlag 1989.