

ROUGH FRACTIONAL INTEGRAL OPERATORS ON MORREY—ADAMS SPACES

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Abstract. In 1981, Adams introduced another variant of Morrey spaces, and we call it the Morrey–Adams space. In this paper, we investigate the boundedness of rough fractional integral operators on Morrey–Adams spaces under a weaker condition. We compare it with Adams’ results. We then refine the results to vanishing Morrey–Adams spaces in the local sense. We also prove the beyond Adams’ inequality of rough fractional integral operators on local Morrey–Adams spaces for the radial functions.

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REFERENCES

- [1] A. C. ALBALIK, A. ALMEIDA, AND S. SAMKO, *On the invariance of certain vanishing subspaces of Morrey spaces with respect to some classical operators*, Banach J. Math. Anal., **14**, 3 (2020), 1–14.
- [2] A. ALMEIDA, AND S. SAMKO, *Approximation in Morrey spaces*, J. Funct. Anal., **272**, 6 (2017), 2392–2411.
- [3] A. GOGATISHVILI, AND R. C. O. MUSTAFAYEV, *New characterization of Morrey spaces*, Eurasian Math. J., **4**, 1 (2013), 54–64.
- [4] D. I. HAKIM, *Complex interpolation of predual of general local Morrey-type spaces*, Banach J. Math. Anal., **12**, 3 (2018), 541–571.
- [5] D. R. ADAMS, *Lectures on L^p -potential theory*, Umea U. Report no. **2**, (1981), 1–74.
- [6] D. SALIM, Y. SOEHARYADI, AND W. S. BUDHI, *Rough fractional integral operators and beyond Adams inequalities*, Math. Inequal. Appl., **22**, 2 (2019), 747–760.
- [7] L. I. HEDBERG, *On certain convolution inequalities*, Proc. Am. Math. Soc., **36**, 2 (1972), 505–510.
- [8] J. DUOANDIKOETXEA, *Fractional integrals on radial functions with applications to weighted inequalities*, Ann. Mat. Pura Appl. **192**, 4 (2013), 553–568.
- [9] T. IIDA, *Weighted inequalities on Morrey spaces for linear and multilinear fractional integrals with homogeneous kernels*, Taiwan J. Math., **18**, 1 (2014), 147–185.
- [10] V. I. BURENKOV, AND V. S. GULIYEV, *Necessary and sufficient conditions for boundedness of the maximal operator in local Morrey-type spaces*, Stud. Math., **163**, (2004), 157–176.
- [11] V. I. BURENKOV, AND V. S. GULIYEV, *Necessary and sufficient conditions for the boundedness of Riesz Potential in Local Morrey-type spaces*, Potential Anal., **30**, (2009), 211–249.