

Available online at www.sciencedirect.com





Expo. Math. 27 (2009) 227-239

www.elsevier.de/exmath

Morrey spaces and fractional integral operators

A. Eridani^{a, b}, Vakhtang Kokilashvili^c, Alexander Meskhi^{b, c, *}

^aDepartment of Mathematics, Airlangga University, Campus C, Mulyorejo, Surabaya 60115, Indonesia

^bSchool of Mathematical Sciences, Government College University, 68-B New Muslim Town, Lahore, Pakistan

^cA. Razmadze Mathematical Institute, M. Aleksidze St., Tbilisi 0193, Georgia

Received 4 July 2008; received in revised form 8 December 2008

Abstract

The present paper is devoted to the boundedness of fractional integral operators in Morrey spaces defined on quasimetric measure spaces. In particular, Sobolev, trace and weighted inequalities with power weights for potential operators are established. In the case when measure satisfies the doubling condition the derived conditions are simultaneously necessary and sufficient for appropriate inequalities.

© 2009 Elsevier GmbH. All rights reserved.

MSC 2000: primary 26A33; secondary 42B35; 47B38

Keywords: Fractional integrals; Morrey spaces; Non-homogeneous spaces; Trace inequality; Two-weight inequality

1. Introduction

The main purpose of this paper is to establish the boundedness of fractional integral operators in (weighted) Morrey spaces defined on quasimetric measure spaces. We derive Sobolev, trace and two-weight inequalities for fractional integrals. In particular, we

0723-0869/\$ - see front matter © 2009 Elsevier GmbH. All rights reserved. doi:10.1016/j.exmath.2009.01.001

^{*} Corresponding author at: School of Mathematical Sciences, Government College University, 68-B New Muslim Town, Lahore, Pakistan. Tel.: +99532326247; fax: +99532364086.

E-mail addresses: keumala_ikhsanti@yahoo.com (A. Eridani), kokil@rmi.acnet.ge (V. Kokilashvili), meskhi@rmi.acnet.ge (A. Meskhi).