



Banach J. Math. Anal. 7 (2013), no. 1, 41–58

BANACH JOURNAL OF MATHEMATICAL ANALYSIS

ISSN: 1735-8787 (electronic)

www.emis.de/journals/BJMA/

ON LEFT AND RIGHT DECOMPOSABLY REGULAR OPERATORS

QINGPING ZENG*, HUAJIE ZHONG AND SHIFANG ZHANG

Communicated by M. Neumann

ABSTRACT. Let $B(X, Y)$ denote the set of all bounded linear operators from Banach space X to Banach space Y . In this paper, we introduce the concepts of left and right decomposably regular operators, left and right decomposably Fredholm operators in the setting of $B(X, Y)$, and the corresponding holomorphic versions in the setting of $B(X)$. By using Harte's techniques, we obtain various characterizations of these classes of operators. As the applications of these characterizations, we can compute the topological interiors and closures of them.

SCHOOL OF MATHEMATICS AND COMPUTER SCIENCE, FUJIAN NORMAL UNIVERSITY,
FUZHOU 350007, P.R. CHINA

E-mail address: zqpping2003@163.com

E-mail address: zhonghuaiejie@sina.com

E-mail address: shifangzhangfj@163.com

Date: Received: 17 March 2012; Accepted: 20 June 2012.

* Corresponding author.

2010 *Mathematics Subject Classification.* Primary 47A53; Secondary 15A09.

Key words and phrases. Banach spaces, generalized inverse, left decomposably regular operators, left decomposably Fredholm operators, topological interior.