

Banach J. Math. Anal. 7 (2013), no. 1, 160–172

BANACH JOURNAL OF MATHEMATICAL ANALYSIS ISSN: 1735-8787 (electronic) www.emis.de/journals/BJMA/

## HILBERT-SCHMIDT DIFFERENCES OF COMPOSITION OPERATORS BETWEEN THE WEIGHTED BERGMAN SPACES ON THE UNIT BALL

## LI ZHANG AND ZE-HUA ZHOU\*

Communicated by M. A. Ragusa

ABSTRACT. Let  $\varphi, \psi$  be the analytic self-maps of the unit ball  $\mathbb{B}$ , we characterize the Hilbert-Schmidt differences of two composition operator  $C_{\varphi}$  and  $C_{\psi}$ on weighted Bergman space  $A_{\alpha}^2$ , and give some conclusions about the topological structure of  $\mathcal{C}(A_{\alpha}^2)$ , the space of all bounded composition operators on  $A_{\alpha}^2$ endowed with operator norm.

DEPARTMENT OF MATHEMATICS, TIANJIN UNIVERSITY, TIANJIN 300072, P.R. CHINA. *E-mail address:* zhangli0977@126.com *E-mail address:* zehuazhou2003@yahoo.com.cn

Date: Received: 26 July 2012; Accepted: 1 September 2012.

<sup>\*</sup> Corresponding author.

<sup>2010</sup> Mathematics Subject Classification. Primary:47B38; Secondary:45P05, 47G10, 32A37, 47B33, 33B30, 46E15.

Key words and phrases. Hilbert-Schmidt operator, composition operator, weighted Bergman space, unit ball.