DIFFERENCE OF COMPOSITION OPERATORS ON HARDY SPACE

WALEED AL-RAWASHDEH AND SIVARAM K. NARAYAN

Abstract. Suppose \( \varphi \) is an analytic self-map of open unit disk \( \mathbb{D} \) and \( w \) is an analytic function on \( \mathbb{D} \). Then a weighted composition operator induced by \( \varphi \) with weight \( w \) is given by \((W_w, \varphi)f)(z) = w(z)f(\varphi(z))\), for \( z \in \mathbb{D} \) and \( f \) analytic on \( \mathbb{D} \). We find a sufficient condition under which two composition operators lie in the same path component of \( \mathcal{C}(H^2) \), and we find a sufficient condition for the difference of such operators to be compact on \( H^2(\mathbb{D}) \). Then we provide another example that answers a question raised by Shapiro and Sundberg \[18\] negatively. Moreover, we characterize the Hilbert-Schmidt difference of two composition operators on \( H^2(\mathbb{D}) \).


Keywords and phrases: Weighted Composition Operators, Compact operator, Hilbert-Schmidt operator, Carleson-type measure, pseudo-hyperbolic distance, Hardy space, Bergman spaces.

REFERENCES


