

Composition operators from \mathcal{B}^α to Q_K type spaces

Jizhen Zhou

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Abstract. Suppose that ϕ is an analytic self-map of the unit disk Δ . Necessary and sufficient condition are given for the composition operator $C_\phi f = f \circ \phi$ to be bounded and compact from α -Bloch spaces to Q_K type spaces which are defined by a nonnegative, nondecreasing function $K(r)$ for $0 \leq r < \infty$. Moreover, the compactness of composition operator C_ϕ from \mathcal{B}^0 to Q_K type spaces are studied, where \mathcal{B}^0 is the space of analytic functions of f with $f' \in H^\infty$ and $\|f\|_{\mathcal{B}^0} = |f(0)| + \|f'\|_\infty$.

1. Introduction

Let ϕ be an analytic self-map of the unit disk $\Delta = \{z : |z| < 1\}$ of the complex plane \mathbb{C} . A linear composition operator C_ϕ is defined by $C_\phi f = f \circ \phi$ for f in the set $H(\Delta)$ of analytic functions on Δ , and the study of such operators from Banach space X into Banach space Y has attracted the most attention.

The compactness of the composition operator C_ϕ from \mathcal{B} to \mathcal{B} was studied by K. Madigan and A. Matheson in [6]. P. Bourdon, J. Cima and A. Matheson investigated the compact composition operators C_ϕ from BMOA