

## Generalized composition operators from Bloch type spaces to $Q_K$ type spaces

Fang Zhang and Yongmin Liu

(Communicated by Miroslav Engliš)

**2000 Mathematics Subject Classification.** 47B38, 30D45, 30D50.

**Keywords and phrases.** Generalized composition operator, Bloch type space,  $Q_K$  type space,  $K$ -Carleson measure.

---

**Abstract.** This paper characterizes the boundedness and compactness of the generalized composition operator  $(C_\varphi^g f)(z) = \int_0^z f'(\varphi(\xi))g(\xi)d\xi$  from Bloch type spaces to  $Q_K$  type spaces.

---

### 1. Introduction

Let  $\varphi$  be an analytic self-map of the unit disk  $D$ . For  $g \in H(D)$ , the class of all analytic functions on  $D$ , we define a linear operator as follows

$$(C_\varphi^g f)(z) = \int_0^z f'(\varphi(\xi))g(\xi)d\xi, \quad f \in H(D).$$

The operator  $C_\varphi^g$  is called the generalized composition operator which is introduced in [5] for the first time. When  $g = \varphi'$ , we see that this operator is essentially composition operator  $C_\varphi$  which is defined by  $C_\varphi f = f \circ \varphi$ . Therefore,  $C_\varphi^g$  is a generalization of the composition operator  $C_\varphi$ . One of the critical problems on composition operators is to relate function theoretic properties of  $\varphi$  to operator theoretic properties of the restriction of  $C_\varphi$  to various Banach spaces of analytic functions. The composition