

REFLEXIVITY OF THE NON-INVERTIBLE MULTIPLICATION
OPERATOR ON WEIGHTED HARDY SPACES

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Abstract: In this paper we present sufficient conditions for reflexivity of any powers of the multiplication operator acting on Banach spaces of formal Laurent series, whenever it is not invertible.

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1. Introduction

Let $\{\beta(n)\}_{n=-\infty}^{\infty}$ be a sequence of positive numbers satisfying $\beta(0) = 1$. If $1 < p < \infty$, the space $L^p(\beta)$ consists of all *formal Laurent series* $f(z) = \sum_{n=-\infty}^{\infty} \hat{f}(n)z^n$ such that the norm

$$\|f\| = \|f\|_{\beta} = \left(\sum_{n=-\infty}^{\infty} |\hat{f}(n)|^p \beta(n)^p \right)^{\frac{1}{p}}$$

is finite. These are reflexive Banach spaces with the norm $\|\cdot\|_{\beta}$. Let $\hat{f}_k(n) =$

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