

OPERATORS IN $\mathcal{L}(L_a^2(\mathbb{D}))$ AND THE ASSOCIATED SYMBOLS*

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Dedicated to Dr. Dan Tiba on the occasion of his 70th anniversary

Abstract

Let $\mathbb{D} = \{z \in \mathbb{C} : |z| < 1\}$ and $\mathcal{L}(L_a^2(\mathbb{D}))$ be the space of all bounded linear operators from the Bergman space $L_a^2(\mathbb{D})$ into itself. In this paper we shall associate symbols to bounded linear operators in $\mathcal{L}(L_a^2(\mathbb{D}))$ and analyse if a symbol calculus can be obtained.

MSC: 47B35, 32M15

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1 Introduction

Let $\mathbb{D} = \{z \in \mathbb{C} : |z| < 1\}$ be the open unit disk in the complex plane \mathbb{C} . Let $dA(z)$ be the area measure on \mathbb{D} normalized so that the area of the disk is 1. Let $L^2(\mathbb{D}, dA)$ be the Hilbert space of Lebesgue measurable functions on \mathbb{D} with the inner product

$$\langle f, g \rangle = \int_{\mathbb{D}} f(z) \overline{g(z)} dA(z), f, g \in L^2(\mathbb{D}).$$

The Bergman space $L_a^2(\mathbb{D})$ is the set of those functions in $L^2(\mathbb{D}, dA)$ that are analytic on \mathbb{D} . The norm on $L_a^2(\mathbb{D})$ is also described by $\|f\|^2 = \sum_{n=0}^{\infty} \frac{|a_n|^2}{n+1}$,

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