BEREZIN TRANSFORM OF INVERTIBLE POSITIVE OPERATORS[*]

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Abstract

In this paper we introduce a class $\mathcal{A} \subset L^\infty(\mathbb{D})$ such that if $\phi \in \mathcal{A}$ and satisfies certain positive-definite condition, then there exists a $\psi \in \mathcal{A}$ such that $\phi(z) \leq \alpha e^{\psi(z)}$, for some constant $\alpha > 0$. Further, if $\phi(z) = \langle Ak_z, k_z \rangle$, for some bounded positive, invertible operator A from the Bergman space $L_a^2(\mathbb{D})$ into itself then $\psi(z) = \langle (\log A)k_z, k_z \rangle$. Here k_z, $z \in \mathbb{D}$ are the normalized reproducing kernel of $L_a^2(\mathbb{D})$. Applications of these results are also discussed.

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1 Introduction

Let $dA(z)$ be the area measure on the open unit disk $\mathbb{D}$ in the complex plane $\mathbb{C}$ normalized so that the area of the disk is 1. That is, $dA(z) = \frac{1}{\pi}dxdy$. Let