

Bloch-type space of temperature functions on a finite cylinder

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Abstract. We define the Bloch-type space \mathcal{B}_T as the linear space of temperature functions on the cylinder $S_T = \mathbb{S}^1 \times (0, T)$ such that $\sup_{(x,t) \in \Omega_T} t \left| \frac{\partial u}{\partial t}(x, t) \right| < \infty$, $\Omega_T = [0, 2] \times (0, T)$; we prove that $(b^1(S_T))^* = \mathcal{B}_T$, where $b^1(S_T)$ is the Bergman space of temperature functions on S_T belonging to $L^1(\Omega_T, dxdt)$.

1. Introduction

For \mathbb{D} the open unit disk in the complex plane \mathbb{C} , the classic Bergman space A^p is the subspace of analytic functions $f : \mathbb{D} \rightarrow \mathbb{C}$ such that $f \in L^p(\mathbb{D})$, $0 < p < \infty$. If $1 \leq p < \infty$ then A^p is a Banach space, and for $p > 1$ it is well known that $(A^p)^* = A^q$ under the integral pairing (see [4, Theorem 1.16])

$$\langle f, g \rangle = \int_{\mathbb{D}} f(z) \overline{g(z)} dA(z), \quad f \in A^p, \quad g \in A^q,$$