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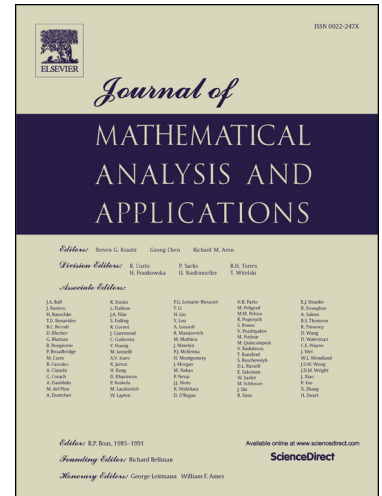
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ON RANK-ONE ASYMMETRIC TRUNCATED TOEPLITZ OPERATORS ON FINITE-DIMENSIONAL MODEL SPACES

BARTOSZ ŁANUCHA

ABSTRACT. In this paper we present some consequences of the description of matrix representations of asymmetric truncated Toeplitz operators acting between finite-dimensional model spaces. We then describe all rank-one asymmetric truncated Toeplitz operators acting between finite-dimensional model spaces.

1. INTRODUCTION

Let H^2 be the classical Hardy space of the unit disk $\mathbb{D} = \{z: |z| < 1\}$ and let P denote the Szegő projection, that is, the orthogonal projection from $L^2(\partial\mathbb{D})$ onto H^2 .

The unilateral shift $S: H^2 \rightarrow H^2$ is defined on H^2 by

$$Sf(z) = zf(z).$$

It is known that the S -invariant subspaces of H^2 can be characterized in terms of inner functions. An inner function α is a function from H^∞ , the algebra of bounded analytic functions on \mathbb{D} , such that $|\alpha| = 1$ a.e. on $\partial\mathbb{D}$. The theorem of A. Beurling states that every closed nontrivial S -invariant subspace of H^2 is of the form αH^2 for some inner function α . Consequently, each of the closed nontrivial subspaces of H^2 invariant under the backward shift S^* is given by

$$K_\alpha = H^2 \ominus \alpha H^2$$

with α inner. The space K_α is called the model space corresponding to the inner function α .

The model space K_α has a reproducing kernel property and for each $w \in \mathbb{D}$ the function

$$k_w^\alpha(z) = \frac{1 - \overline{\alpha(w)}\alpha(z)}{1 - \overline{w}z}, \quad z \in \mathbb{D},$$

is the corresponding kernel function, that is, $f(w) = \langle f, k_w^\alpha \rangle$ for every $f \in K_\alpha$ ($\langle \cdot, \cdot \rangle$ being the usual integral inner product). Since $k_w^\alpha \in H^\infty$, the set K_α^∞ of all bounded functions in K_α is dense in K_α .

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