

1100-47-56

Raul E Curto* (raul-curto@uiowa.edu), Department of Mathematics, University of Iowa, Iowa City, IA 52242. *Aluthge transforms of 2-variable weighted shifts*. Preliminary report.

Let H be a separable infinite-dimensional Hilbert space, and let $L(H)$ be the algebra of bounded linear operators on H . A (contractive) representation of \mathbb{Z}_+^2 by weighted shifts is a map $T : \mathbb{Z}_+^2 \rightarrow L(H)$ for which there exists a Hilbert space isomorphism $V : H \rightarrow \ell^2(\mathbb{Z}_+^2)$ such that $VT(\mathbf{m})V^* = U_+(\mathbf{m})W_+(\mathbf{m})$, where W_+ is given by a function w_+ such that $w_+(\mathbf{m} + \mathbf{n}; \mathbf{k}) = w_+(\mathbf{m}; \mathbf{n} + \mathbf{k})w_+(\mathbf{n}; \mathbf{k})$ for all $\mathbf{m}, \mathbf{n}, \mathbf{k} \in \mathbb{Z}_+^2$. A 2-variable weighted shift is a pair of the form $(T(1, 0), T(0, 1))$.

In joint work with Jasang Yoon, we introduce the Aluthge transform of 2-variable weighted shifts and study its basic properties. We first prove that, in contrast to the 1-variable case, this transform may not preserve the (joint) hyponormality of a commuting pair. Next, we study how the Taylor and Taylor essential spectra of 2-variable weighted shifts behave under the Aluthge transform. Finally, we show that, within the class of commuting *hyponormal* 2-variable weighted shifts whose cores are of tensor form, the above mentioned joint spectra are preserved under the Aluthge transform. (Received January 25, 2014)