

The Spectral Picture and Joint Spectral Radius of the Generalized Spherical Aluthge Transform

Raúl E. Curto

For an arbitrary commuting d -tuple \mathbf{T} of Hilbert space operators, we fully determine the spectral picture of the generalized spherical Aluthge transform $\Delta_t(\mathbf{T})$ and we prove that the spectral radius of \mathbf{T} can be calculated from the norms of the iterates of $\Delta_t(\mathbf{T})$.

We first determine the spectral picture of $\Delta_t(\mathbf{T})$ in terms of the spectral picture of \mathbf{T} ; in particular, we prove that, for any $0 \leq t \leq 1$, $\Delta_t(\mathbf{T})$ and \mathbf{T} have the same Taylor spectrum, the same Taylor essential spectrum, the same Fredholm index, and the same Harte spectrum. We then study the joint spectral radius $r(\mathbf{T})$, and prove that $r(\mathbf{T}) = \lim_n \left\| \Delta_t^{(n)}(\mathbf{T}) \right\|_2$ ($0 < t < 1$), where $\Delta_t^{(n)}$ denotes the n -th iterate of Δ_t . For $d = t = 1$, we give an example where the above formula fails.

The talk is based on recent research with Chafiq Benhida, Sang Hoon Lee and Jasang Yoon.

Department of Mathematics, University of Iowa, Iowa City, IA 52242, U.S.A.

E-mail: raul-curto@uiowa.edu