Operators and Matrices
Volume 14, Number 2 (2020), 305–316
doi:10.7153/oam-2020-14-24

n–FOLD JORDAN PRODUCT COMMUTING MAPS WITH A λ–ALUTHGE TRANSFORM

YOUNJIN KIM AND EUNGIL KO

Abstract. Let $\mathscr{B}(H)$ be the set of all bounded linear operators from H to H, where H is a complex Hilbert space. In this paper, we study the properties of T when the λ-Aluthge transform of T^n is T. Also we prove that the bijective map $\Phi : \mathscr{B}(H) \to \mathscr{B}(K)$ commutes with a λ-Aluthge transform under the n-fold jordan product if and only if there exists an unitary operator $U : H \to K$ such that $\Phi(T) = UTU^*$ for every T in $\mathscr{B}(H)$.

Mathematics subject classification (2010): 47A05, 47B49, 46L40.
Keywords and phrases: Quasi-normal operators, polar decomposition, λ-Aluthge transform.

REFERENCES

[1] A. ALUTHGE, *On p-hyponormal operators for $0 < p < 1$*, Integral Equations Operator Theory **13** (1990) 307–315.
[2] F. BOTELHO, L. MOLNAR, AND G. NAGY, *Linear bijections on von Neumann factors commuting with λ-Aluthge transform*, Bull. London Math. Soc. **48** (2016) 74–84.
[3] F. CHABBABI, *Product commuting maps with the λ-Aluthge transform*, J. Math. Anal. Appl. **449** (2017) 589–600.
[4] F. CHABBABI AND M. MBEKHTA, *Jordan-product commuting nonlinear maps with λ-Aluthge transform*, J. Math. Anal. Appl. **450** (2017) 293–313.
[5] I. JUNG, E. KO AND C. PEARCY, *Aluthge transform of operators*, Integral Equations Operator Theory **37** (2000) 437–448.
[6] K. OKUBO, *On weakly unitarily invariant norm and the Aluthge transformation*, Linear Algebra Appl. **371** (2003) 369–375.

Paper OaM-14-24