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DISK–CYCLICITY AND CODISK–CYCLICITY OF CERTAIN SHIFT OPERATORS

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Abstract. In this paper we characterize the disk-cyclicity and codisk-cyclicity of the bilateral weighted shifts on Hilbert space $\ell^2(\mathbb{Z},\mathscr{K})$ with weight sequence $\{A_n\}_{n\in\mathbb{Z}}$ of positive invertible diagonal operators on a separable complex Hilbert space $\mathscr{K}$, respectively. At last, we establish similar results for the disk-cyclic and codisk-cyclic shift operator B on $L^2(\beta)$ defined by $Bf_j = f_{j-1}$, $j\in\mathbb{Z}$, where $\{f_j\}_{j\in\mathbb{Z}}$ is a basis of $L^2(\beta)$.

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REFERENCES

[1] A. S. ATEF, *On G-cyclicity of operators*, Thesis, The Islamic University of Gaza, 2007.
[2] F. BAYART, É. MATHERON, *Hypercyclic operators failing the Hypercyclicity Criterion on classical Banach spaces*, J. Funct. Anal. **250** (2007) 426–441.
[3] F. BAYART, É. MATHERON, *Dynamics of Linear Operators*, Camberidge University Press, 2009.
[4] R. M. GETHNER, J. H. SHAPIRO, *Universal vectors for operators on spaces of holomorphic functions*, Proc. Amer. Math. Soc. **100** (1987) 281–288.
[5] K. G. GROSSE-ERDMANN, *Hypercyclic and chaotic weighted shifts*, Studia. Math. **139** (2000) 47–68.
[6] K. G. GROSSE-ERDMANN, A. P. MANGUILLOT, *Linear Chaos*, Springer, New York, 2011.
[7] M. HAZARIKA, S. C. ARORA, *Hypercyclic operator weighted shifts*, Bull. Korean Math. Soc. **41** (2004) 589–598.
[8] Z. Z. JAMIL, *Cyclic Phenomena of operators on Hilbert space*, Ph. D. Thesis, University of Baghdad, 2002.
[9] Z. Z. JAMIL, M. HELAL, *Equivalent between the Criterion and the Three Open Set's Conditions in Disk-Cyclicity*, Int. J. Contemp. Math. Sciences. **8** (2013) 257–261.
[10] Z. Z. JAMIL, A. G. NAOUM, *Disk-cyclic and weighted shifts operators*, International J. of Math. Sci. and Engg. Appls. (IJMSEA), **7** (2013) 375–388.
[11] C. KITAI, *Invariant Closed Sets for Linear Operators*, Ph. D. Thesis, University of Toronto, 1982.
[12] Y. X. LIANG AND Z. H. ZHOU, *Hereditarily hypercyclicity and supercyclicity of weighted shifts*, J. Korean Math. Soc. **51** (2) (2014) 363–382.
[13] Y. X. LIANG AND Z. H. ZHOU, *Disjoint supercyclic powers of weighted shifts on weighted sequence spaces*, Turkish J. Math. **38** (2014) 1007–1022.
[14] Y. X. LIANG AND Z. H. ZHOU, *Hypercyclic behaviour of multiples of composition operators on the weighted Banach space*, Bull. Belg. Math. Soc. Simon Stevin, **21** (3) (2014) 385–401.
[15] Y. X. LIANG AND Z. H. ZHOU, *Supercyclic tuples of the adjoint weighted composition operators on Hilbert spaces*, Bull. Iranian Math. Soc. **41** (1) (2015) 121–139.
[16] H. N. SALAS, *Supercyclicity and weighted shifts*, Studia Math. **135** (1999) 55–74.
[17] B. YOUSEFI AND A. FARROKHINIA, *On the hereditarily hypercyclic operators*, J. Korean Math. Soc. **43** (2006) 1219–1229.
[18] L. ZHANG, Z. H. ZHOU, *Disjoint mixing weighted backward shifts on the space of all complex valued square summable sequences*, J. Comput. Anal. Appl. **16** (4) (2014) 618–625.

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