SUBSPACE–HYPERCYCLIC WEIGHTED SHIFTS

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Abstract. Our aim in this paper is to obtain necessary and sufficient conditions for bilateral and unilateral weighted shift operators to be subspace-transitive. We show that the Herrero question [6] holds true even on a subspace of a Hilbert space, i.e. there exists an operator T such that both T and T^* are subspace-hypercyclic operators for some subspaces. We display the conditions on the direct sum of two invertible bilateral forward weighted shift operators to be subspace-hypercyclic.

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REFERENCES

[1] N. BAMERNI, V. KADETS, AND A. KILIÇMAN, *Hypercyclic operators are subspace hypercyclic*, Journal of Mathematical Analysis and Applications **435** (2), 1812–1815, 2016.

[2] N. BAMERNI AND A. KILIÇMAN, *On the direct sum of two bounded linear operators and subspace-hypercyclicity*, arXiv preprint arXiv:1501.02862v2, 2016.

[3] N. BAMERNI, A. KILIÇMAN AND M. S. M. NOORANI, *A review of some works in the theory of diskcyclic operators*, Bulletin of the Malaysian Mathematical Sciences Society **39** (02), 723–739, 2016.

[4] N. S. FELDMAN, *Hypercyclicity and supercyclicity for invertible bilateral weighted shifts*, Proceedings of the American Mathematical Society **131** (2), 479–485, 2003.

[5] K.-G. GROSSE-ERDMANN AND A. P. MANGUILLOT, *Linear chaos*, Springer Science & Business Media, 2011.

[6] D. A. HERRERO, *Limits of hypercyclic and supercyclic operators*, Journal of Functional Analysis **99** (1), 179–190, 1991.

[7] H. HILDEN AND L. WALLEN J., *Some cyclic and non-cyclic vectors of certain operators*, Indiana University Mathematics Journal **23** (7), 557–565, 1974.

[8] C. KITAI, *Invariant closed sets for linear operators*, University of Toronto, 1984.

[9] C. LE, *On subspace-hypercyclic operators*, Proceedings of the American Mathematical Society **139** (8), 2847–2852, 2011.

[10] B. F. MADORE AND R. A. MARTÍNEZ-AVENDAÑO, *Subspace hypercyclicity*, Journal of Mathematical Analysis and Applications **373** (2), 502–511, 2011.

[11] H. REZAEI, *Notes on subspace-hypercyclic operators*, Journal of Mathematical Analysis and Applications **397** (1), 428–433, 2013.

[12] S. ROLEWICZ, *On orbits of elements*, Studia Mathematica **1** (32), 17–22, 1969.

[13] H. N. SALAS, *Hypercyclic weighted shifts*, Transactions of the American Mathematical Society **347** (3), 993–1004, 1995.

[14] J. ZEANA, *Cyclic Phenomena of operators on Hilbert space*, Thesis, University of Baghdad, 2002.

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