Operators and Matrices
Volume 6, Number 3 (2012), 567–576
doi:10.7153/oam-06-38

NULL–ORBIT REFLEXIVE OPERATORS

DON HADWIN, ILEANA IONAŞCU AND HASSAN YOUSEFI

Abstract. We introduce and study the notion of null-orbit reflexivity, which is a slight perturbation of the notion of orbit-reflexivity. Positive results for orbit reflexivity and the recent notion of $\mathbb{C}$-orbit reflexivity both extend to null-orbit reflexivity. Of the two known examples of operators that are not orbit-reflexive, one is null-orbit reflexive and the other is not. The class of null-orbit reflexive operators includes the classes of hyponormal, algebraic, compact, strictly block-upper (lower) triangular operators, and operators whose spectral radius is not 1. We also prove that every polynomially bounded operator on a Hilbert space is both orbit-reflexive and null-orbit reflexive.

Mathematics subject classification (2010): 47A15.
Keywords and phrases: Operators, subspaces, null-orbit reflexivity.

REFERENCES

[1] SOPHIE GRIVAUX, MARIA ROGINSKAYA, *On Read's type operators on Hilbert spaces*, Int. Math. Res. Not. IMRN 2008, Art. ID rnn 083, 42 pp.
[2] DON HADWIN, *Algebraically reflexive linear transformations*, Linear and Multilinear Algebra **14** (1983), 225–233.
[3] DON HADWIN, ILEANA IONAŞCU, MICHAEL MCHUGH, HASSAN YOUSEFI, *$\mathbb{C}$-orbit reflexive operators*, Operators and Matrices, to appear (arXiv:1005.5202).
[4] DON HADWIN, ERIC NORDGREN, *Reflexivity and direct sums*, Acta Sci. Math. (1991), 181–197.
[5] DON HADWIN, ERIC NORDGREN, HEYDAR RADJAVI, PETER ROSENTHAL, *Orbit-reflexive operators*, J. London Math. Soc. (2) **34**, 1 (1986), 111–119.
[6] IRVING KAPLANSKY, *Infinite abelian groups*, Revised edition, The University of Michigan Press, Ann Arbor, Mich. 1969ssertation, University of New Hampshire, 1995.
[7] DAVID R. LARSON, *Reflexivity, algebraic reflexivity and linear interpolation*, Amer. J. Math. **110** (1988), 283–299.
[8] LEONYA LIVSHITS, *Locally finite-dimensional sets of operators*, Proc. Amer. Math. Soc. **119**, 1 (1993), 165–169.
[9] W. MLAK, *Operator valued representations of function algebras. Linear operators and approximation. II*, (Proc. Conf., Oberwolfach Res. Inst., Oberwolfach, 1974), Internat. Se. Numer. Math., Vol. 25, Birkhäuser (Basel, 1974).
[10] VLADIMÍR MÜLLER, *Kaplansky's theorem and Banach PI-algebras*, Pacific J. Math. **141**, 2 (1990), 355–361.
[11] V. MÜLLER, J. VRŠOVSKÝ, *On orbit-reflexive operators*, J. Lond. Math. Soc. (2) **79**, 2 (2009), 497–510.

Paper OaM-06-38