Operators
and
Matrices
Volume 5, Number 3 (2011), 487–494

HYPERINVARIANT SUBSPACES FOR OPERATORS HAVING A NORMAL PART

HYOUNG JOON KIM

Abstract. Let T be a nonscalar operator of the form $\begin{pmatrix} A & * \\ 0 & B \end{pmatrix}$. It is well known ([5], [6]) that if both A and B are normal operators, then T has a nontrivial hyperinvariant subspace. In this paper, it is shown that if A is a nonscalar normal operator, then either $\begin{pmatrix} A & C \\ 0 & B \end{pmatrix}$ or $\begin{pmatrix} A & 0 \\ D & B \end{pmatrix}$ has a nontrivial hyperinvariant subspace.

Mathematics subject classification (2010): 47A15.
Keywords and phrases: Hyperinvariant subspaces, normal operators, extremal vectors.

REFERENCES

[1] S. ANSARI AND P. ENFLO, *Extremal vectors and invariant subspaces*, Trans. Amer. Math. Soc., **350** (1998), 539–558.
[2] I. CHALENDAR AND J. PARTINGTON, *Convergence properties of minimal vectors for normal operators and weighted shifts*, Proc. Amer. Math. Soc., **133** (2005), 501–510.
[3] R. G. DOUGLAS AND C. PEARCY, *Hyperinvariant subspaces and transitive algebras*, Michigan Math. J., **19** (1972), 1–12.
[4] H. J. KIM, *Hyperinvariant subspace problem for quasinilpotent operators*, Integral Equations Operator Theory, **61**, 1 (2008), 103–120.
[5] H. RADJAVI AND P. ROSENTHAL, *Hyperinvariant subspaces for spectral and n-normal operators*, Acta Sci. Math. (Szeged), **32** (1971), 121–126.
[6] H. RADJAVI AND P. ROSENTHAL, *Invariant Subspaces*, second ed., Dover Publications, Mineda, New York, 2003.

Paper OaM-05-36