α−FREDHOLM OPERATORS RELATIVE TO INVARIANT SUBSPACES

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Abstract. Let T be a bounded linear operator on a Hilbert space H and let W be a closed $T-$invariant subspace of H. Then T has a matrix representation on the space $W \oplus W^\perp$ by $T = \begin{bmatrix} A & C \\ 0 & B \end{bmatrix}$. In this paper, the relationships between the $\alpha-$Fredholm properties of T and those of the pair of operators A and B are studied.

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REFERENCES

[1] M. AHUES, A. LARGILLIER AND B. V. LIMAYE, *Spectral computations for bounded operators*, Chapman & Hall/CRC, Boca Raton, 2001.

[2] A. AMMAR, *Some properties of the Wolf and Weyl essential spectra of a sequence of linear operators* $\nu-$*convergent*, Indagationes Mathematicae, 28, 2, 2017, 424–435.

[3] S. C. ARORA AND P. DHARMARHA, *On weighted Weyl spectrum. II*, Bull. Korean Math. Soc., 43, 4, 2006, 715–722.

[4] B. A. BARNES, *Spectral and Fredholm theory involving the diagonal of a bounded linear operator*, Acta Sci. Math. (Szeged), 73, (1-2), 2007, 237–250.

[5] L. BURLANDO, *Approximation by semi-Fredholm and semi-α -Fredholm operators in Hilbert spaces of arbitrary dimension*, Acta Sci. Math. (Szeged), 65, (1-2), 1999, 217–275.

[6] S. R. CARADUS, W. E. PFAFFENBERGER AND B. YOOD, *Calkin algebras and algebras of operators on Banach spaces*, Lect. Notes Pure Appl. Math., vol. 9, Marcel Dekker, Inc., New York, 1974.

[7] S. V. DJORDJEVIĆ AND F. HERNÁNDEZ-DÍAZ, *On α -Weyl operators*, Advances in Pure Mathematics, 6, (3), 2016, 138–143.

[8] G. EDGAR, J. ERNEST AND S. G. LEE, *Weighing operator spectra*, Indiana Univ. Math. J., 21, 1, 1971, 61–80.

[9] J. ERNEST, *Operators with α -closed range*, Tôhoku Math. J., 24, 1, 1972, 45–49.

[10] R. HARTE, *Exactness, invertibility and the love knot*, Filomat, 29, 10, 2015, 2347–2353.

[11] E. LUFT, *The two-sided closed ideals of the algebra of bounded linear operators of a Hilbert space*, Czechoslovak Math, 18, 4, 1968, 595–605.

[12] S. SÁNCHEZ-PERALES AND S. V. DJORDJEVIĆ, *Spectral continuity using ν -convergence*, J. Math. Anal. Appl., 433, 1, 2016, 405–415.

[13] S. SÁNCHEZ-PERALES AND S. V. DJORDJEVIĆ, *Spectral continuity relative to invariant subspaces*, Complex Anal. Oper. Theory, 11, 4, 2017, 927–941.

[14] B. S. YADAV AND S. C. ARORA, *A generalization of Weyl's spectrum*, Glas. Mat. Ser. III, 15, 35, 1980, 315–419.

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