HIGHER–RANK NUMERICAL RANGE IN INFINITE–DIMENSIONAL HILBERT SPACE

RUBÉN A. MARTÍNEZ-AVENDAÑO

Abstract. In this paper we calculate the higher-rank numerical range, as defined by Choi, Kribs and Życzkowski, of selfadjoint operators and of nonunitary isometries on infinite-dimensional Hilbert space.

REFERENCES

[1] MAN-DUEN CHOI, MICHAEL GIESINGER, JOHN A. HOLBROOK AND DAVID W. KRIBS, *Geometry of higher-rank numerical ranges*, Linear and Multilinear Algebra **56** (2008), 53-64.

[2] MAN-DUEN CHOI, JOHN A. HOLBROOK, DAVID W. KRIBS, AND KAROL ŻYCZKOWSKI, *Higher-rank numerical ranges of unitary and normal matrices*, Operators and Matrices **1** (2007) 409–426.

[3] MAN-DUEN CHOI, DAVID W. KRIBS AND KAROL ŻYCZKOWSKI, *Higher-rank numerical ranges and compression problems*, Linear Algebra Appl. **418** (2006) 828–839.

[4] JOHN B. CONWAY, *A Course in Functional Analysis*, second edition, Springer, New York, 1990.

[5] DOUGLAS R. FARENICK, *Matricial extensions of the numerical range: a brief survey*, Linear Multilinear Algebra **34** (1993) 197–211.

[6] HWA-LONG GAU, CHI-KWONG LI AND PEI YUAN WU, *Higher-rank numerical ranges and dilations*, J. Operator Theory, to appear.

[7] PAUL R. HALMOS, *A Hilbert Space Problem Book*, second edition, Springer, New York, 1982.

[8] CHI-KWONG LI, YIU-TUNG POON AND NUNG-SING SZE, *Condition for the higher rank numerical range to be non-empty*, Linear and Multilinear Algebra, to appear.

[9] CHI-KWONG LI, YIU-TUNG POON AND NUNG-SING SZE, *Higher rank numerical ranges and low rank perturbations of quantum channels*, preprint.

[10] CHI-KWONG LI AND NUNG-SING SZE, *Canonical forms, higher rank numerical ranges, totally isomorphic subspaces and matrix equations*, Proc. Amer. Math. Soc., to appear.

[11] CHI-KWONG LI AND NAM-KIU TSING, *On the k -th matrix numerical range*, Linear Multilinear Algebra **28** (1991) 229–239.

[12] RUBÉN A. MARTÍNEZ-AVENDAÑO AND PETER ROSENTHAL, *An Introduction to Operators on the Hardy–Hilbert Space*, Springer, New York, 2007.

[13] PETER ROSENTHAL AND HEYDAR RADJAVI, *Invariant Subspaces*, second edition, Dover, Mineola, NY, 2002.

[14] BÉLA SZ.-NAGY AND CIPRIAN FOIAŞ, *Harmonic Analysis of Operators in Hilbert Space*, North-Holland, Amsterdam, 1970.

[15] J. WERMER, *On invariant subspaces of normal operators*, Proc. Amer. Math. Soc. **3** (1952) 270–277.

[16] HUGO J. WOERDEMAN, *The higher rank numerical range is convex*, Linear Multilinear Algebra, **56** (2008) 65–67.

© ELEMENT, Zagreb
Paper OAM-02-16

Operators and Matrices
www.ele-math.com
oam@ele-math.com