

SOME INEQUALITIES FOR SECTOR MATRICES

MINGHUA LIN

Abstract. Two new inequalities are proved for sector matrices. The first one complements a recent result in [Oper. Matrices, 8 (2014) 1143–1148]; the second one is an analogue of the AM-GM inequality, where the geometric mean for two sector matrices was introduced in [Linear Multilinear Algebra 63 (2015) 296–301]. As an application of the second inequality, we present similar inequalities for singular values or norms.

Mathematics subject classification (2010): 15A45, 15A42, 47A30.

Keywords and phrases: Inequality, singular value, unitarily invariant norm, geometric mean.

REFERENCES

- [1] R. BHATIA, *Positive Definite Matrices*, Princeton University Press, Princeton, 2007.
- [2] R. BHATIA, *Matrix Analysis*, GTM 169, Springer-Verlag, New York, 1997.
- [3] S. DRURY, *Principal powers of matrices with positive definite real part*, Linear Multilinear Algebra **63** (2015) 296–301.
- [4] S. DRURY, M. LIN, *Singular value inequalities for matrices with numerical ranges in a sector*, Oper. Matrices, **8** (2014) 1143–1148.
- [5] C.-K. LI, N. SZE, *Determinantal and eigenvalue inequalities for matrices with numerical ranges in a sector*, J. Math. Anal. Appl. **410** (2014) 487–491.
- [6] M. LIN, *Extension of a result of Haynsworth and Hartfiel*, Arch. Math. **104** (2015) 93–100.
- [7] X. ZHAN, *Inequalities involving Hadamard products and unitarily invariant norms*, Adv. in Math. (China) **27** (1998) 416–422.
- [8] F. ZHANG, *A matrix decomposition and its applications*, Linear Multilinear Algebra **63** (2015) 2033–2042.
- [9] P. ZHANG, *A further extension of Rotfel'd theorem*, Linear Multilinear Algebra, **63** (2015), 2511–2517.