

SINGULAR VALUES INEQUALITIES FOR MATRIX MEANS

MOHAMMED SABABHEH, SHIGERU FURUICHI, SHIVA SHEYBANI
AND HAMID REZA MORADI

Abstract. In this article, we show multiple inequalities for the singular values of the difference of matrix means. The obtained results refine and complement some well established results in the literature. Although we target singular values inequalities, we will show several matrix means inequalities, as well.

Mathematics subject classification (2020): Primary 47A63; Secondary 47A64, 47B15, 15A45.

Keywords and phrases: Positive matrices, matrix means, singular values.

REFERENCES

- [1] S. FURUICHI AND H. R. MORADI, *Some refinements of classical inequalities*, Rocky Mountain J. Math. **48** (7) (2018), 2289–2309.
- [2] S. FURUICHI, H. R. MORADI AND M. SABABHEH, *New sharp inequalities for operator means*, Linear Multilinear Algebra., **67** (8) (2019), 1567–1578.
- [3] I. H. GÜMÜŞ, O. HIRZALLAH AND N. TASKARAA, *Singular value inequalities for the arithmetic, geometric and Heinz means of matrices*, Linear Multilinear Algebra., **59** (12) (2011), 1383–1392.
- [4] I. H. GÜMÜŞ, H. R. MORADI AND M. SABABHEH, *More accurate operator means inequalities*, J. Math. Anal. Appl., **465** (2018), 267–280.
- [5] O. HIRZALLAH, F. KITTANEH, M. KRNIĆ, N. LOVRIČEVIĆ AND J. PEČARIĆ, *Eigenvalue inequalities for differences of means of Hilbert space operators*, Linear Algebra Appl., **436** (5) (2012), 1516–1527.
- [6] D. S. MITRINOVIĆ, *Analytic inequalities*, New York, Springer Verlag 1970.