COMPLETE INTERPOLATION OF MATRIX VERSIONS OF HERON AND HEINZ MEANS

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Abstract. The interpolation and comparison of a matrix version of Heron mean, $F_\alpha(a,b) = (1-\alpha)\sqrt{ab} + \alpha\frac{a+b}{2}$, $0 \leqslant \alpha \leqslant 1$, $a,b \in \mathbb{R}^+$ is considered by R. Bhatia in [1]. We shall discuss the complete interpolation and comparison of matrix version of such means by extending the range of α from $[0,1]$ to $\mathbb{R}^+$. We shall also discuss some more results involving Heinz means.

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REFERENCES

[1] R. BHATIA, *Interpolating the arithmetic-geometric mean inequality and its operator version*, Linear Algebra Appl. 413 (2006) 355–363.
[2] R. BHATIA, *Positive definite Matrices*, Princeton University Press, Princeton, (2007).
[3] R. BHATIA AND K. R. PARTHASARTHY, *Positive definite functions and operator inequalities*, Bull. London Math. Soc., 32 (2000) 214–228.
[4] F. HIAI AND H. KOSAKI, *Means of Hilbert space operators*, Lecture notes in Mathematics 1820, Springer, New York, (2003).
[5] F. HIAI AND H. KOSAKI, *Means of matrices and comparison of their norms*, Indiana Univ. Math. J., 48 (1999) 899–936.
[6] R. A. HORN AND C. R. JOHNSON, *Topics in Matrix Analysis*, Cambridge Univ. Press, (1990).
[7] M. SINGH AND H. L. VASUDEVA, *Norm inequalities involving matrix monotone functions*, Math. Ineq. Appl., 7 (2004) 621–627.
[8] X. ZHAN, *Matrix Inequalities*, Lecture notes in Mathematics 1790, Springer, New York, (2002).

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