

## NORM INEQUALITIES RELATED TO HEINZ AND LOGARITHMIC MEANS

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*Abstract.* In this paper, we got some refinements of the norm inequalities related to the Heinz mean and logarithmic mean.

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### REFERENCES

- [1] R. BHATIA, *Positive Definite Matrcies*, Princeton University Press, Princeton (2007).
- [2] R. BHATIA AND C. DAVIS, *More matrix forms of the arithmetic-geometric mean inequality*, SIAM J. Matrix Anal. Appl., 14 (1993), 132–136.
- [3] R. BHATIA AND C. DAVIS, *A Cauchy-Schwarz inequality for operators with applications*, Linear Algebra Appl., 223/224 (1995), 119–129.
- [4] D. DRISSI, *Sharp inequalities for some operator means*, SIAM J. Matrix Anal. Appl., 28 (3) (2006), 822–828.
- [5] F. HIAI AND H. KOSAKI, *Means for 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 University Press, Cambridge, 1991.
- [7] Y. KAPIL AND M. SINGH, *Contractive maps on operator ideals and norm inequalities*, Linear Algebra Appl., 459 (2014), 475–492.
- [8] H. KOSAKI, *Arithmetic-geometric mean and related inequalities for operators*, J. Funct. Anal., 156 (1998), 429–451.
- [9] X. ZHAN, *Inequalities for unitarily invariant norms*, SIAM J. Matrix Anal. Appl., 20 (1999), 466–470.