

## INEQUALITIES RELATED TO HEINZ AND HERON MEANS

LIMIN ZOU

*Abstract.* We present a matrix inequality related to Heinz and Heron means, and show that it is a refinement of some improved Heinz inequalities for matrices.

*Mathematics subject classification (2010):* 15A15, 15A42, 15A60.

*Keywords and phrases:* Heinz means, Heron means, Heinz inequality, unitarily invariant norms.

### REFERENCES

- [1] R. BHATIA, *Interpolating the arithmetic-geometric mean inequality and its operator version*, Linear Algebra Appl. **413** (2006), 355–363.
- [2] R. BHATIA, C. DAVIS, *More matrix forms of the arithmetic-geometric mean inequality*, SIAM J. Matrix Anal. Appl. **14** (1993), 132–136.
- [3] D. DRISSI, *Sharp inequalities for some operator means*, SIAM J. Matrix Anal. Appl. **28** (2006), 822–828.
- [4] C. HE, L. ZOU, S. QAISAR, *On improved arithmetic-geometric mean and Heinz inequalities for matrices*, J. Math. Inequal. **6** (2012), 453–459.
- [5] X. HU, *Some inequalities for unitarily invariant norms*, J. Math. Inequal. **6** (2012), 615–623.
- [6] F. KITTANEH, *On the convexity of the Heinz means*, Integr. Equ. Oper. Theory. **68** (2010), 519–527.
- [7] F. KITTANEH, Y. MANASRAH, *Improved Young and Heinz inequalities for matrices*, J. Math. Anal. Appl. **361** (2010), 262–269.
- [8] S. WANG, L. ZOU, Y. JIANG, *Some inequalities for unitarily invariant norms of matrices*, J. Inequal. Appl. **2011** (2011), 10.
- [9] X. ZHAN, *Inequalities for unitarily invariant norms*, SIAM J. Matrix Anal. Appl. **20** (1998), 466–470.
- [10] L. ZOU, *On some matrix inequalities*, Acta. Math. Sin, Chinese Ser. **55** (2012), 715–720.