NOTES ON AN ANDERSON-TAYLOR TYPE INEQUALITY*

MINGHUA LIN†

Abstract. As a complement to Olkin’s extension of Anderson-Taylor’s trace inequality, the following inequality is proved:

\[
\frac{1}{n} \sum_{j=1}^{n} \left( \sum_{i=1}^{j} A_{i} \right) A_{j}^{-1} \left( \sum_{i=1}^{j} A_{i} \right) \preceq \frac{1}{2} \sum_{k=1}^{n} \sum_{j=1}^{k} \sum_{i=1}^{j} A_{i},
\]

where the inequality is in the sense of Loewner partial order and \( A_{i}, i = 1, \ldots, n \), are positive definite matrices. Some related results for M-matrices are also discussed.

Key words. Loewner order, Trace inequality, Positive definite matrix, M-matrix.

AMS subject classifications. 15A60, 15A18, 15A42, 15A45.

*Received by the editors on November 23, 2012. Accepted for publication on January 21, 2013.
†Department of Applied Mathematics, University of Waterloo, Waterloo, Ontario, N2L 3G1 Canada (mlin87@ymail.com).