

A NOTE ON THE REVERSE ORDER LAWS FOR $\{1, 2, 3\}$ - AND $\{1, 2, 4\}$ -INVERSES OF MULTIPLE MATRIX PRODUCTS*

XIFU LIU[†] AND HU YANG[†]

Abstract. Motivated by the equivalent conditions for the inclusions

$$A_n\{1, 2, i\} \cdots A_2\{1, 2, i\}A_1\{1, 2, i\} \subseteq (A_1A_2 \cdots A_n)\{1, 2, i\} \quad (i = 3, 4)$$

presented in [B. Zheng and Z. Xiong. The reverse order laws for $\{1,2,3\}$ - and $\{1,2,4\}$ -inverses of multiple matrix products. *Linear Multilinear Algebra*, 58:765–782, 2010.], we show that for $i \in \{3, 4\}$,

$$A_n\{1, 2, i\} \cdots A_2\{1, 2, i\}A_1\{1, 2, i\} = (A_1A_2 \cdots A_n)\{1, 2, i\}$$

is equivalent to

$$A_n\{1, 2, i\} \cdots A_2\{1, 2, i\}A_1\{1, 2, i\} \subseteq (A_1A_2 \cdots A_n)\{1, 2, i\}.$$

Key words. Reverse order law, Maximal and minimal ranks, Generalized inverse, Generalized Schur complement.

AMS subject classifications. 15A09.

*Received by the editors on July 22, 2010. Accepted for publication on May 8, 2011. Handling Editor: Ravindra B. Bapat.

[†]College of Mathematics and Statistics, Chongqing University, 401331, China (liuxifu211@hotmail.com, yh@cqu.edu.cn)