

A NEW SOLVABLE CONDITION FOR A PAIR OF GENERALIZED SYLVESTER EQUATIONS*

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Abstract. A necessary and sufficient condition is given for the quaternion matrix equations $A_i X + Y B_i = C_i$ ($i = 1, 2$) to have a pair of common solutions X and Y . As a consequence, the results partially answer a question posed by Y.H. Liu (Y.H. Liu, Ranks of solutions of the linear matrix equation $AX + YB = C$, *Comput. Math. Appl.*, 52 (2006), pp. 861-872).

Key words. Quaternion matrix equation, Generalized Sylvester equation, Generalized inverse, Minimal rank, Maximal rank.

AMS subject classifications. 15A03, 15A09, 15A24, 15A33.

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