

THE REFLEXIVE RE-NONNEGATIVE DEFINITE SOLUTION TO A QUATERNION MATRIX EQUATION*

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Abstract. In this paper a necessary and sufficient condition is established for the existence of the reflexive re-nonnegative definite solution to the quaternion matrix equation $AXA^* = B$, where $*$ stands for conjugate transpose. The expression of such solution to the matrix equation is also given. Furthermore, a necessary and sufficient condition is derived for the existence of the general re-nonnegative definite solution to the quaternion matrix equation $A_1X_1A_1^* + A_2X_2A_2^* = B$. The representation of such solution to the matrix equation is given.

Key words. Quaternion matrix equation, Reflexive matrix, Re-nonnegative definite matrix, Reflexive re-nonnegative definite matrix.

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