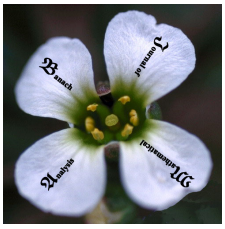

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THE SOLVABILITY AND THE EXACT SOLUTION OF A SYSTEM OF REAL QUATERNION MATRIX EQUATIONS

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Abstract. In this paper, we establish necessary and sufficient conditions for the solvability of the system of real quaternion matrix equations

$$\begin{cases} A_1X = C_1, \\ YB_1 = D_1, \\ A_2Z = C_2, ZB_2 = D_2, A_3ZB_3 = C_3, \\ A_4X + YB_4 + C_4ZD_4 = E_1. \end{cases}$$

We also present an expression of the general solution to the system. The findings of this paper widely extend the known results in the literature.

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