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HOW TO ESTABLISH UNIVERSAL BLOCK-MATRIX FACTORIZATIONS*

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Abstract. A general method is presented for establishing universal factorization equalities for $2{\times}2$ and $4{\times}4$ block matrices. As applications, some universal factorization equalities for matrices over four-dimensional algebras are established, in particular, over the Hamiltonian quaternion algebra.

Key words. Block matrix, Determinant, Quaternion matrices, Universal factorization, Involutory matrices, Idempotent matrices.

AMS subject classifications. 15A23, 15A33

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