Sums of H-unitary Matrices

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Abstract

Let $H \in M_n$ be an nonsingular and Hermitian. A matrix A is said to be H-*unitary* if $A^*HA = H$. The set of H-unitary matrices forms a multiplicative group. However, the sum of H-unitary matrices need not be H-unitary. We discuss some previous results and show analogous or new properties for sums of H-unitary matrices. For example, we show that every matrix can be expressed as a sum of H-unitary matrices. We also characterize all matrices expressible as a sum of two H-unitary matrices.

Keywords

Sums, H-unitary, indefinite linear algebra, indefinite inner product.

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