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A NEW DECOMPOSITION FOR SQUARE MATRICES*

JULIO BENíTEZ†

Abstract. A new decomposition is derived for any complex square matrix. This decomposition is based on the canonical angles between the column space of this matrix and the column space of its conjugate transpose. Some applications of this factorization are given; in particular some matrix partial orderings and the relationship between the canonical angles and various classes of matrices are studied.

Key words. Decomposition of matrices, EP matrices, Canonical angles, Matrix partial ordering.

AMS subject classifications. 15A23, 15A57.

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†Departamento de Matemática Aplicada, Instituto de Matemática Multidisciplinar, Universidad Politécnica de Valencia, Camino de Vera s/n, 46022, Valencia, Spain. (jbenitez@mat.upv.es).