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ON A J -POLAR DECOMPOSITION OF A BOUNDED OPERATOR AND MATRICES OF J -SYMMETRIC AND J -SKEW-SYMMETRIC OPERATORS

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ABSTRACT. In this paper we study a possibility of a decomposition of a bounded operator in a Hilbert space H as a product of a J -unitary and a J -self-adjoint operators, where J is a conjugation (an antilinear involution). This decomposition shows an inner structure of a bounded operator in a Hilbert space. Some decompositions of J -unitary and unitary operators which generalize decompositions in the finite-dimensional case are also obtained. Matrix representations for J -symmetric and J -skew-symmetric operators are studied. Simple basic properties of J -symmetric, J -skew-symmetric and J -isometric operators are obtained.

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