COMPLEX SYMMETRIC OPERATORS, SKEW
SYMMETRIC OPERATORS AND REFLEXIVITY

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Abstract. Let $\mathcal{H}$ be a complex separable infinite-dimensional Hilbert space and $C$ be a conjugation on $\mathcal{H}$. Let $\mathcal{C}$ and $\mathcal{S}$ denote respectively the set of $C$-symmetric operators and the set of $C$-skew-symmetric operators on $\mathcal{H}$. It is proved that $\mathcal{C}$ and $\mathcal{S}$ are Roberts orthogonal to each other, and some distance formulas from an operator to the sets $\mathcal{C}$, $\mathcal{S}$ are obtained. We exhibit the annihilating relation between $\mathcal{C}$ and $\mathcal{S}$ by describing their preannihilators. As applications, it is shown that $\mathcal{S}$ is hyperreflexive and not transitive.


Keywords and phrases: Complex symmetric operator, skew-symmetric operator, preannihilator, reflexivity, transitivity.

REFERENCES