



## SOLVING THE SYLVESTER EQUATION $AX - XB = C$ WHEN $\sigma(A) \cap \sigma(B) \neq \emptyset$ \*

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**Abstract.** The method for solving the Sylvester equation  $AX - XB = C$  in the complex matrix case, when  $\sigma(A) \cap \sigma(B) \neq \emptyset$ , by using Jordan normal form, is given. Also, the approach via the Schur decomposition is presented.

**Key words.** Sylvester equation, Jordan normal form, Schur decomposition.

**AMS subject classifications.** 15A24.

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