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An explicit formula for the inverse of a pentadiagonal Toeplitz matrix.

Summary: In this paper, we mainly consider finding an explicit formula for the inverse of a pentadiagonal Toeplitz matrix. For that purpose, we first factorize the modified form of a pentadiagonal Toeplitz matrix by two tridiagonal Toeplitz matrices, and then use the Sherman-Morrison-Woodbury inversion formula. As a result, an explicit inverse of a pentadiagonal Toeplitz matrix is obtained under certain assumptions. Numerical experiments are given to show the effectiveness of our results.

Keywords: inverse; pentadiagonal matrix; Toeplitz matrix; factorization; Sherman-Morrison-Woodbury inversion; numerical experiment
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