

1. MagdyTawfik Hanna, Nabila Philip Attalla Seif and Waleed Abd El Maguid Ahmed, " Hermite-Gaussian-Like Eigenvectors of the Discrete Fourier Transform Matrix Based on the Direct Utilization of the Orthogonal Projection Matrices on its Eigenspaces," IEEE Transactions on Signal Processing, Vol. 54, No. 7, pp. 2815-2819, July 2006.

Abstract:

A new version is proposed for the Gram–Schmidt algorithm (**GSA**), the orthogonal Procrustes algorithm (**OPA**) and the sequential orthogonal Procrustes algorithm (**SOPA**) for generating Hermite–Gaussian like orthonormal eigenvectors for the discrete Fourier transform matrix. This version is based on the direct utilization of the orthogonal projection matrices on the eigenspaces of matrix rather than the singular value decomposition of those matrices for the purpose of generating initial orthonormal eigenvectors. The proposed version of the algorithms has the merit of achieving a significant reduction in the computation time.