

A new eigenvalue algorithm for unitary Hessenberg matrices via quasiseparable representations

Yuli Eidelman¹, Iulian Haimovici²

¹*Tel-Aviv University*

²*The Open University of Israel*

Abstract

We present an algorithm to compute eigenvalues of a unitary Hessenberg matrix U . Such a matrix admits a quasiseparable of order one representation. We determine the eigenvalues of the matrix U via eigenvalues of the Hermitian matrix $A = \frac{1}{2}(U + U^*)$ and the anti-Hermitian matrix $B = \frac{1}{2}(U - U^*)$. The matrices A and B have quasiseparable of order two representations and we apply our previously developed methods to compute their eigenvalues.
