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A Variant of a Double Structure-Preserving QR Algorithm for Symmetric and Hamiltonian Matrices

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Abstract : Recently, an efficient backward-stable algorithm for computing eigenvalues and vectors of a symmetric and Hamiltonian matrix has been proposed. The method preserves the symmetric and Hamiltonian structures of the original matrix, during the whole process. In this paper, we revisit the method. We derive a way for implementing the reduction of the matrix to the appropriate condensed form. Then, we construct a novel version of the implicit QR-algorithm for computing the eigenvalues and vectors.

Keywords : block implicit QR algorithm, preservation of a double structure, QR algorithm, symmetric and Hamiltonian structures
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