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UNIQUENESS OF QR - DECOMPOSITION

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Abstract:

The QR - Decomposition for a regular matrix is unique in general. In this paper it is shown that in some particular cases this decomposition is unique.

Introduction:

The methods for calcu'ating eigen values wh:ch make use of unitary transformations tends to be numarically stable. Therefore, it is desirab'e to have a method which makes use of unitary transformations. Such a method is the QR transformation of Francis, the orignator of this method. In this method an arbitrary matrix A, is decompcsed into a product QR where Q is un'tary and R is upper triangular matrix [3] and QR-decomposition is not unique generally. An effort has been made to obtain the uniqueness of QR-Decomposition under certain conditions.

Theorem:

Every regu'ar n-square matrix A can be decomposed as A = QR, where Q is unitary and R is upper triangular [1].

From th's theorem, it is known that every regu'ar matrix can be decomposed into a product of unitary and upper triangular