

Structures preserved by the QR -algorithm

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In this talk we investigate some classes of structures that are preserved by applying a QR step on a matrix A . We will handle two classes of such structures: the first we call polynomial structures, for example a matrix being Hermitian or Hermitian up to a rank one correction, and the second we call rank structures, which are encountered for example in all kinds of what we could call Hessenberg-like and semiseparable-like matrices. An advantage of our approach is that we define a structure by decomposing it as a collection of building stones which we call structure blocks. This allows us to state the results in their natural, most general context.

Keywords: QR algorithm, Hessenberg-like matrices, semiseparable-like matrices, rank structure, polynomial structure