

A rational QZ method

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Abstract

In this talk we introduce a rational QZ method for the dense, unsymmetric, generalized eigenvalue problem. The method operates on matrix pairs in Hessenberg form and implicitly performs nested subspace iteration driven by elementary rational functions. This is achieved without solving any systems. We review a direct reduction method to Hessenberg form and demonstrate that subspaces can be deflated already during the reduction phase. We introduce a shifted implicit rational QZ step on a Hessenberg pair. Numerical experiments demonstrate that a good choice of poles can significantly speedup the convergence compared to the QZ method.

References

- [1] Camps D., Meerbergen K., and Vandebril R., *A rational QZ method*, 2018, <https://arxiv.org/abs/1802.04094>.