Restartable Generalized Second Order Krylov Subspace Method

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Abstract: The second order Arnoldi (SOAR) method (SIAM J. Matrix Anal. Appl., 26(2005), pp.640-659) is an efficient method for solving a large-scale quadratic eigenvalue problems (QEP), since it can preserves essential structures and properties of the QEP. However, the SOAR method is not suitable for restart, or it is not clear how to perform a restart in the SOAR method. In this talk, a generalized second order Krylov subspace is introduced by modifying the second-order Krylov subspace and a restartable generalized second order Krylov subspace (GSOAR) method is presented. Some numerical experiments are given to show that the restartable GSOAR method has a better performance than the SOAR method when applied to solving the structured QEP.