We consider Anderson extrapolation [1] to accelerate the (stationary) Richardson iterative method for sparse linear systems. Using an Anderson mixing at periodic intervals, we assess how this benefits convergence to a prescribed accuracy. The method, named Alternating Anderson-Richardson [3], has appealing properties for highperformance computing, such as the potential to reduce communication and storage in comparison to more conventional linear solvers. We establish sufficient conditions for convergence, and we evaluate the performance of this technique in combination with various preconditioners through numerical examples. Furthermore, we propose an augmented version of this technique.

More details can be found in [2].

References


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