

CONVERGENCE OF THE IDRSTAB METHOD USING THE RESIDUAL SMOOTHING TECHNIQUES

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The IDRstab method [2] has been proposed for solving large nonsymmetric linear systems. IDRstab is more effective than both IDR(s) and BiCGstab(ℓ), but the residual norms still oscillate, and the convergence of recursively computed residual norms sometimes does not coincide with that of true residual norms by numerical errors on some model problems.

In this talk, we use the residual smoothing techniques presented in [3] to overcome these difficulties. Here, we apply the smoothing techniques to an alternative implementation of IDRstab noted in [2] to reduce the computational cost. Since it is known that the approximate solutions obtained by the smoothing algorithms are not more accurate than that of the non-smoothed one [1], we present a strategy to improve the accuracy of the approximate solutions by combining the smoothing techniques and the alternative implementation of IDRstab. Numerical experiments demonstrate the efficiency of our smoothed variant of IDRstab.

References

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