

Multigrid Waveform Relaxation Based On Finite Element Discretisation

Noora Habibi

SUMMARY

We propose the waveform relaxation method and its multigrid acceleration as solution of ordinary differential equations based on linear basis Finite Element discretisation and by regular triangular mesh ($\beta = \frac{\pi}{2}$ introduced in [1]). Its convergence analysis by means of semialgebraic mode analysis (SAMA) are investigated. Furthermore, quantitative convergence estimates and several numerical results in two-dimension are presented.

Keywords: Finite Element method, Waveform relaxation method, Multigrid technique, Semialgebraic mode analysis.

AMS Classification: First code, second, third

References

- [1] GASPAR, FRANCISCO JOSÉ AND GRACIA, JOSÉ L AND LISBONA, FRANCISCO JAVIER. Fourier analysis for multigrid methods on triangular grids. *SIAM Journal on Scientific Computing* **31**(3), 2081–2102, 2009.

Department
Faculty of Mathematical Sciences, University
Shahrood University of Technology, Shahrood, Semnan, Iran. email:
habibi85nu@gmail.com