

Some convergence results for inexact Radau IIA methods applied to evolutionary PDEs.

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Abstract

The convergence of a family of AMF-Radau methods for the time integration of evolutionary semilinear Partial Differential Equations (PDEs) of Advection Diffusion Reaction type semi-discretized in space is considered. The methods are based on very few inexact Newton Iterations of Approximate Matrix Factorization type (AMF) applied to the two-stage Radau IIA method. Uniform bounds for the global time-space errors on semi-linear PDEs when simultaneously the time step-size and the spatial grid resolution tend to zero are derived. Numerical illustrations supporting the theory are presented.

References

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