

Analysis of a higher order semi-implicit BDF for semilinear problems

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We deal with a numerical solution of a scalar semilinear convection-diffusion equation, which represents a simplified model to the compressible Navier-Stokes equations. For discretization we use discontinuous Galerkin method (DG) in combination with semi-implicit backward differential formulae (BDF).

The resulting scheme is sufficiently robust and needs only solution of linear problem at each time step. We present analysis of this scheme for higher orders with a priori error estimates.