

A priori error analysis of nonlinear singularly perturbed problems

Miloslav Vlasak¹ Vaclav Kucera²

We are concerned in the numerical analysis of the solution of semilinear singularly perturbed convection–diffusion equation. We assume discretization in space by discontinuous Galerkin method. In Kucera (2013), the method of lines as well as the implicit Euler method are analyzed and diffusion uniform error estimates are derived. We extend these results to midpoint rule, BDF-2 and time discontinuous Galerkin method of general order.

¹ Charles University in Prague, Faculty of Mathematics and Physics, Dep. of Numerical Mathematics, Prague, Czech Republic,
vlasak@karlin.mff.cuni.cz

² Charles University in Prague, Faculty of Mathematics and Physics, Dep. of Numerical Mathematics,
kucera@karlin.mff.cuni.cz