

On the Error Estimate of a Combined Finite Element–Finite Volume Method

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Abstract

We present the error analysis of an efficient numerical method for solving the scalar nonlinear conservation law equation with a diffusion term. The main idea of the method is to discretize nonlinear convective terms with the aid of monotone finite volume method, whereas the rest diffusion terms are discretized by the conforming piecewise linear finite element method. It is showed that the error is of the first order, i.e. $O(h)$, which is optimal in this case.