

The Optimal Order Error Estimates for Finite Element Approximations to Hyperbolic Problems

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摘要

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Abstract In this paper, the linear finite element approximation to the positive and symmetric, linear hyperbolic systems is analyzed and an $O(h^2)$ order error estimate is established under the conditions of strongly regular triangulation and the H^3 -regularity for the exact solutions. The convergence analysis is based on some superclose estimates derived in this paper. Our method and result here are also applicable to general hyperbolic problems. Finally, we discuss the linearized shallow water system of equations.

Key words [Hyperbolic problems](#) [Finite element approximations](#) [Optimal error estimates](#).

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