Hughes, Thomas J. R.; **Franca, Leopoldo P.**; **Mallet, Michel**

A new finite element formulation for computational fluid dynamics. VI. Convergence analysis of the generalized SUPG formulation for linear time- dependent multidimensional advective-diffusive systems. (English) Zbl 0635.76066

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[For part V see the authors, ibid. 59, 85-99 (1986; Zbl 0622.76077).]

An SUPG-type finite element method for linear symmetric multidimensional advective-diffusive systems is described and analyzed. Optimal and near optimal error estimates are obtained for the complete range of advective- diffusive behavior.

MSC:

76N10 Existence, uniqueness, and regularity theory for compressible fluids and gas dynamics
80A20 Heat and mass transfer, heat flow (MSC2010)
65Z05 Applications to the sciences
76R99 Diffusion and convection

Keywords:

SUPG-type finite element method; linear symmetric multidimensional advective-diffusive systems; near optimal error estimates

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