Krishnamachari, S. V.; **Hayes, L. J.**; **Russell, T. F.**

A finite element alternating-direction method combined with a modified method of characteristics for convection-diffusion problems. (English) Zbl 0693.65061

SIAM J. Numer. Anal. 26, No. 6, 1462-1473 (1989).

A finite element alternating direction method is combined with a modified method of characteristics (MMOC) to solve convection diffusion problems. This approach combines the attractive features of the MMOC with those of the alternating direction method. Problems on curved structured grids can be handled. The accuracy of this procedure is demonstrated by linear and nonlinear convection dominated diffusion problems in two space dimensions. The procedure can be generalized to more than two dimensions.

Reviewer: W.Ames

MSC:

65M25	Numerical aspects of the method of characteristics for initial value and initial-boundary value problems involving PDEs	Cited in **8** Documents
65M60	Finite element, Rayleigh-Ritz and Galerkin methods for initial value and initial-boundary value problems involving PDEs	
35K55	Nonlinear parabolic equations	

Keywords:

finite element; alternating direction method; method of characteristics; convection diffusion problems; nonlinear convection

Full Text: DOI