

Funaro, Daniele; Gottlieb, David

Convergence results for pseudospectral approximations of hyperbolic systems by a penalty-type boundary treatment. (English) Zbl 0736.65074

Math. Comput. 57, No. 196, 585-596 (1991).

A new method of imposing boundary conditions in the pseudospectral approximation of a scalar hyperbolic equation is presented. The idea is to collocate the equation at the boundary points as well as in the inner grid points, using the boundary conditions as penalty terms. This technique is extended to general constant coefficient hyperbolic systems of equations. Error estimates for the pseudospectral Legendre method are given.

Reviewer: [W.Heinrichs \(Düsseldorf\)](#)

MSC:

[65M70](#) Spectral, collocation and related methods for initial value and initial-boundary value problems involving PDEs

Cited in **23** Documents

[65M15](#) Error bounds for initial value and initial-boundary value problems involving PDEs

[35L45](#) Initial value problems for first-order hyperbolic systems

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