DIFFERENTIAL DIFFERENCE INEQUALITIES
RELATED TO HYPERBOLIC FUNCTIONAL
DIFFERENTIAL SYSTEMS AND APPLICATIONS

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Abstract. Initial boundary value problems for quasilinear hyperbolic systems are transformed
by discretization in space variables into systems of ordinary functional differential equations.
Sufficient conditions for the convergence of the method of lines are given. An implicit difference
method is proposed for the numerical solving of systems thus obtained. This leads to an implicit
difference method for the original problem. A comparison technique is used. We give a complete
convergence analysis for the methods and we show by an example that the new methods are
considerable better than the classical schemes.

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