On the nonlocal boundary value problem for semilinear hyperbolic equation

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Abstract: In this work, we study the nonlocal boundary value problem for a semilinear hyperbolic equation. Under the compatibility conditions and sufficiently smooth assumption for given data, the theorem on existence and uniqueness is established. The first and second orders of accuracy difference schemes for the approximate solution of these problems are presented. The convergence estimates for the solution of these difference schemes are obtained. Finally, these difference schemes are applied to the one dimensional nonlinear hyperbolic equation.
Keywords: difference scheme, semilinear hyperbolic equations.
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