Homotopy Perturbation Method for One-Dimensional Hyperbolic Equation with Integral Conditions

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In this study, we use the homotopy perturbation method (HPM) to solve an initial-boundary value problem with a non-classic condition for the one-dimensional wave equation. We will deal with a new type of non-local boundary value problems which are the solution of hyperbolic partial differential equations with a non-standard boundary specification. The method is very reliable and effective and provides the solution in terms of rapid convergent series. Several examples are tested to support our study.

Key words: Homotopy Perturbation Method; Wave Equation; Non-Standard Boundary Conditions; Closed Form Solution; Hyperbolic Partial Differential Equation.