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The Analog Computer Solution of Hyperbolic Partial Differential Equations with Various Boundary Conditions

Goro OSHIMA*

Hyperboric partial differential equations with various boundary conditions are often treated on the distributed transmission line terminated with impedances or nonlinear elements. These equations can be solved with an analog computer through an approximation of difference method. But in order to represent the boundary conditions clearly, the transformation of the equations and difference technique of the partial derivatives become very important problems. Then, as a result of discussing the various methods, the following three methods are useful.

(1) The method that simultaneous first-order partial differential equations are treated directly.

(2) The method that simultaneous first-order partial differential equations are transformed, and forward and backward-wave components are separated.

(3) The method that a hyperbolic partial differential equation is tranformed and solved by using the memory device.

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