Interpolation Derivation Of Numerical Schemes For Linear Advection Equation

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In this paper, first, we present an alternative interpolation deriving process to construct several well-known numerical methods for the linear advection equation. Using Roe's Theorem and the property of interpolation polynomial, we develop a way of determining the coefficients of a general linear scheme, which have the highest order of accuracy in both space and time for the linear advection equation. Finally, by applying the conclusions ontained and the variable interpolation method, we construct some high order schemes to verify the conclusions made in this work.

This is a joint work with Liang Xu and Zhiming Zheng.