

Special Program in Applied Mathematics and Applied Mechanics

*A Locally Conservative Eulerian-Lagrangian Finite Volume Weno Scheme
For Hyperbolic Conservation Law*

2013 - 03 - 13 (Wed.)

15:00 - 17:00

308, Mathematics Research Center Building (ori. New Math. Bldg.)

The object of this talk is to define a locally conservative Eulerian-Lagrangian finite volume scheme with the weighted essentially non-oscillatory property (EL-WENO) for hyperbolic conservation law. This locally conservative method has the advantages of both WENO and Eulerian-Lagrangian schemes. It is formally high-order accurate in space (we present the fifth order version) and essentially non-oscillatory. Moreover, it is free of a CFL time step restriction for linear advection equations, with a relaxed CFL time step restriction for nonlinear hyperbolic equations and has small time truncation error. A subcell WENO reconstruction procedure is defined, and this procedure makes it possible for this Eulerian-Lagrangian schemes. Flux corrections are carried out over the approximated characteristic lines using the Runge-Kutta method with natural continuous extension scheme. Numerical results are provided to illustrate the performance of the scheme.

