

Spring 2021

Math 578

TR 2:50-4:05 Ayres 123

Numerical Methods For Conservation Laws
including parallelization with MPI

Conservation Laws, expressing conservation of mass, momentum, energy, charge, constitute the cornerstone of models of physical processes. Their numerical solution is a central problem in Scientific Computation. An essential feature of the course is parallelization with MPI.

FEATURES

- Unified treatment of physical meaning, mathematical properties, and numerical methods.
- Focused on the physically meaningful, simple to implement, and effective, Finite Volume discretization.
- Emphasis on ideas, derivation, explanation of numerical schemes, physical meaning, how they work, advantages/disadvantages, implementation issues, hands-on computing.
- Parallelization for distributed computing via domain decomposition and MPI.
- Recent advances in shock-capturing higher order schemes.

Prerequisites: PDE (M435); Programming (Fortran or C or Python); or consent of instructor.
The course qualifies for UT's IGMCS program.

www.math.utk.edu/~vasili/578/

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! REGISTER NOW to ensure it will be taught !