6th International Conference and Exhibition on

Mechanical & Aerospace Engineering

November 07-08, 2018 | Atlanta, USA

New central and central DG-type methods on overlapping cells for solving MHD equations on triangular meshes

Yingjie Liu Georgia Institute of Technology, USA

This talk is based on a recently published paper joint with Zhiliang Xu (U. of Notre Dame). They develop new central and central DG-type methods on overlapping cells for solving nonlinear MHD equations on triangular meshes. This method is fully conservative for the magnetic field. New features are introduced to reduce the complexity: the fluid quantities are only computed on the triangular mesh while the magnetic field is also defined on the dual mesh. These methods take advantage of the nice feature of central schemes to avoid dealing with Riemann problems at discontinuities of the electromagnetic field. They can also take arbitrarily small time step sizes when necessary without introducing the O(1/dt) dissipation error.

Biography

Yingjie Liu has his expertise in scientific computing and numerical PDE. He has conducted research in moving mesh Galerkin and mixed FEM for parabolic equations, conservative front tracking for contacts in gas dynamics, BFECC method for level set interface capturing, Navier-Stokes fluid simulations, Hamilton-Jacobi equations etc, central schemes and central DG on overlapping cells for solving conservation laws, shallow water equations, MHD equations etc, and hierarchical reconstruction for eliminating spurious oscillations near shocks and other discontinuities.

yingjie@math.gatech.edu

Notes: