

Department of Mathematics

University of Houston

Scientific Computing Seminar

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Computational and Applied Mathematics

Rice University

Nonlinear stabilization of the magnetohydrodynamics equations. Applications to multiphase flow

Thursday, October 4, 2018

1:30 PM- 2:30 PM

Room 646 PGH

Abstract: The investigations presented in this talk focus on the numerical approximation of the magnetohydrodynamics (MHD) equations and on their stabilization for problems involving either large kinetic Reynolds numbers or multiphase flows. We introduce a new LES model called entropy viscosity and validate it on flows driven by precessing cylindrical containers or counter-rotating impellers. We also present an original approximation method of the Navier-Stokes equations with variable density. This method uses the momentum as variable and stabilizes both mass and momentum equations with the same entropy viscosity. All these studies are performed with SFEMaNS MHD-code developed by J.-L. Guermond and C.Nore since 2002.