



PIMS / AMI Seminar

Tuesday, August 6, 2019

4:30 p.m.

Cameron Library 3-03

“The global smooth solution of the 3D incompressible Euler and Navier-Stokes equations in spherical coordinates”

Shu Wang
College of Applied Sciences
Beijing University of Technology

Abstract

We investigate the globally stabilizing effects of the geometry of the domain and the solution in studying the regularity issue on the three-dimensional incompressible Navier-Stokes and Euler system. We establish the global existence and uniqueness of the smooth solution to the Cauchy problem for the three-dimensional incompressible Navier-Stokes and Euler system, and, also, to the initial boundary value problem for the 3D Navier-Stokes equations, in spherical coordinates for a class of the smooth large initial data. This is the first result on the global existence and uniqueness of the smooth solution to the 3D incompressible Navier-Stokes and Euler equations in spherical coordinates. The related problems the axisymmetric Navier-Stokes equations are surveyed and some results on the singularity formation and global regularity of an axisymmetric model for the 3D incompressible Euler and Navier-Stokes equations will also be reviewed.

