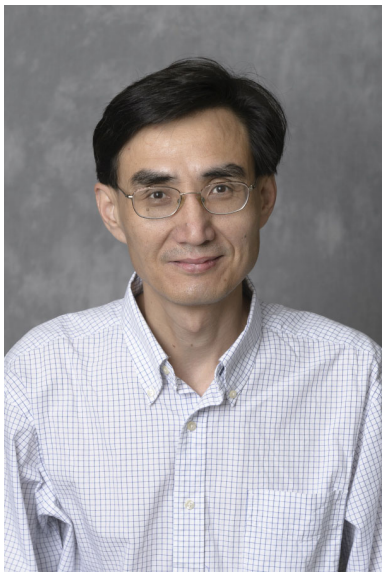
Department of Mathematics
University of Notre Dame

GEOMETRIC ANALYSIS SEMINAR



Speaker: Changyou Wang
Purdue University

Date: Thursday, April 4, 2024
Time: 11:00 AM
Location: 258 Hurley Bldg
Zoom URL: NA

Lecture Title:

Global existence and compactness for axisymmetric Ericksen-Leslie system in dimension three

Abstract

In this talk, I will discuss the Ericksen-Leslie system, which is the governing equation for the hydrodynamics of nematic liquid crystals, in dimension three. Mathematically, this is a dissipative system strongly coupling between the Navier-Stokes equation for the underlying fluid velocity field and the transported harmonic flow into the unit sphere for the macroscopic orientation field of liquid crystal molecules. Because of the super-critical nonlinearities induced by Ericksen stress tensors, it has been an outstanding open question to establish Leray-Hopf type global solutions for any initial data with finite energy. I will describe a recent work, joint with Joshua Kortum, that proves the existence of such a global solution in the axisymmetric setting.

Changyou Wang - Purdue University