Idaho State University
Department of Mathematics & Statistics

Colloquium

Recent Development of the Energy Methods for Thin Layer Equations

Abstract: Thin layer equations describe the leading order behavior of the fluid motion in narrow domains, in which one of the length scales is small compared to other length scale(s). Applications include fluid systems in boundary layer theory, blood flows, pipeline transport, atmospheric dynamics, meteorology and oceanography. The typical examples are the Prandtl boundary layer equations and hydrostatic Euler equations. Even though these equations are fundamental and important, our mathematical understanding is still at a primitive level.

In this talk we will introduce recent breakthroughs in the energy methods for the thin layer equations. Using the energy methods, we discuss the well-posedness and rigorous mathematical justification for the formal derivation of these systems. This talk is based on a series of joint works with Igor Kukavica, Nader Masmoudi, Robert M. Strain, and Vlad Vicol.

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4:00 pm

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