Karlsruhe Institute of Technology

Seminar of the Work Group
Nonlinear Partial Differential Equations
SS 26

May 6th, 2026, 11:30 - 13:00
Seminar room: SR 3.069

Dispersion in a Two-dimensional Stratified Fluid

Catalina Jurja, Zürich University

Abstract

The inviscid Boussinesq system is a widely used model in the study of oceanic flows, however, the description of its global dynamics remains an open problem. As a step towards understanding the long-time behaviour of its solutions, in this talk we will look at stability of a prototypical stratified steady state. In particular, the combined effect of gravity and stable stratification leads to a dispersive effect in the system for the perturbation and acts as a stabilising mechanism in the fluid. We will discuss the key properties of the perturbed system that allow for extended times of stability (from the local well-posedness timescale) as well as some elements of the proofs. This talk is based on joint works with Klaus Widmayer and Haram Ko.