

First Joint Meeting Brazil Italy of Mathematics Special Session: Recent Progress in Fluid Dynamics

Rio de Janeiro, August 29 - September 02, 2016

Title: On the approximate current-vortex sheets near the onset of instability

Authors: Paolo Secchi

Abstract: We consider the free boundary problem for 2D current-vortex sheets in ideal incompressible magneto-hydrodynamics near the transition point between the linearized stability and instability. In order to study the dynamics of the discontinuity near the onset of the instability, Hunter and Thoo have introduced an asymptotic quadratically nonlinear integro-differential equation for the amplitude of small perturbations of the planar discontinuity.

In this talk we present our results about the well-posedness of the problem in the sense of Hadamard, under a suitable stability condition, that is the local-in-time existence in Sobolev spaces and uniqueness of smooth solutions to the Cauchy problem, and the strong continuous dependence on the data in the same topology.

The results are obtained in a series of joint papers with A. Morando and P. Trebeschi (Brescia).