

On the existence and stability of two-dimensional compressible current-vortex sheets

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Talk Abstract

We are concerned with the nonlinear characteristic free boundary problem for the existence of current-vortex sheets in ideal compressible Magneto-hydrodynamics in two space dimension. We first identify a sufficient condition ensuring the weak stability of the linearized current-vortex sheet problem. Then the local existence of the original nonlinear problem is proved in anisotropic Sobolev spaces, by using a suitable modification of Nash-Moser iteration scheme, provided that the stability condition above is satisfied at each point of the initial discontinuity front.

The exposed results are a joint work with Paolo Secchi, Paola Trebeschi and Difan Yuan.

Keywords: magneto-hydrodynamics, current-vortex sheets, free boundary problem.