

Rearrangements of Functions and Steady Planar Vortices

We discuss a variational principle in which the kinetic energy of a fluid vortex in the half-plane is to be maximised subject to two constraints: that the vorticity should be an (equimeasurable) rearrangement of a prescribed function and that the impulse (linear momentum) should have a prescribed value. We prove a compactness theorem for the maximising sequences and discuss the relationship of this result to stability of the vortex.