

Abstract Submitted
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The dynamics of a vortex ring crossing at density interface

ROBERTO ZENIT, Universidad Nacional Autonoma de Mexico, JOHN DABIRI, Stanford University — We examine the process of an isolated vortex ring crossing the interface between two stratified miscible liquids. Using both planar induced fluorescence and particle image velocimetry, we study the evolution of the ring while crossing the interface considering positive and negative density contrasts. The velocity, density and pressure fields are determined; therefore, it is possible to track the evolution of the vorticity field and the baroclinic torque. We found that the process of baroclinic vorticity production is different for upward or downward moving vortices (from dense to light and from light to dense fluids). Some preliminary results will be discussed. These results could be of importance in the understanding of mixing in stratified environments.

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