

Abstract Submitted  
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**Shear band instability in the presence of convection**<sup>1</sup> SEBASTIEN AUMAITRE, J.P. GOLLUB, Haverford College — One of the main features of the atmospheric motion of giant gas planets, like Jupiter and Saturn, is their remarkably stable shear band structure. The stability and internal structure of this flow, and the consequences for the internal heat transport, are not fully understood. Here we present a flexible device to study in a laboratory experiment the stability of a shear band flow in the presence of convective heat transport. The shear band flow is generated in layer of conductive fluid by spatially periodic Lorentz forces resulting from an electric current passing through the fluid in the presence of a network of magnets placed under the cell. Moreover, a convective flow is created by an imposed temperature gradient across the fluid layer. By changing the current through the fluid, and the temperature difference across the layer, we are able to adjust independently the velocity fields resulting from the shear and thermal forcing. Heat transport, flow patterns, and velocity fields are monitored. Initial results on the threshold for the instability of the shear band flow, and the resulting flow patterns, will be presented.

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