

Abstract Submitted  
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**Pinning of reaction fronts by moving vortices**<sup>1</sup> CHAD WILLIAMSON<sup>2</sup>, TOM SOLOMON, Bucknell University — We present experimental studies of the effects of moving vortices on a propagating reaction front. A vortex moving through the front in the same direction as the front pins and drags the front, depending on the translation speed of the vortex and the maximum component of the vortex velocity in the same direction. The relation between these two velocities when the front is pinned is determined experimentally for a single vortex forced magnetohydrodynamically. Lateral motion of this vortex is achieved with a translation stage that moves both a magnet underneath and a central electrode through the fluid. Studies are also done of front-pinning with a random vortex flow. As the translation speed of the vortex pattern increases, pinning drops out at the weaker vortices in the flow. We discuss generalizations of these front-pinning ideas to front propagation in more general, vortex-dominated flows.

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