Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

**Interaction regimes of unequal viscous vortex pairs in the presence of background shear** PATRICK FOLZ, KEIKO NOMURA, University of California - San Diego — The interaction of two co-rotating viscous vortices in linear background shear is investigated through two-dimensional numerical simulations. In general, equal co-rotating viscous vortices will merge if brought within a critical separation distance. The mutually induced strain causes core detrainment which eventually leads to mutual entrainment and the flow transforming into a single vortex with combined strength. Unequal vortices, depending on the degree of asymmetry, may or may not merge depending on the relative timing of core detrainment and core destruction. When background shear is present, advective motion of the vortices is altered. With sufficiently strong adverse shear, the vortices will separate. Merger may be enhanced or inhibited by favorable or adverse shear respectively. Prior studies of interacting invsicid pairs identified several interaction regimes based on a merging efficiency, i.e., the circulation of the final vortex (or vortices) relative to the initial circulation. Here, a similar method is developed for viscous flows, and is used to objectively identify the observed interaction outcomes. A categorization of possible interactions is presented.

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Date submitted: 01 Aug 2014 Electronic form version 1.4