Vortex-accelerated secondary baroclinic vorticity deposition (VAVD) and domain specific circulation rate of change $\dot{\Gamma}$:

A new process and diagnostic for validating and understanding Richtmyer–Meshkov (accelerated inhomogeneous flow) simulations beyond early times

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We propose a new approach to understanding & validating RM flows beyond the pioneering early time work of Hawley and Zabusky $^{1,2}$. Recently$^3$, we showed the importance of vortex acceleration for producing large amounts of close-lying oppositely-signed vorticity (vortex bilayers) up to 10 multivalue times. Now we introduce $\dot{\Gamma}$, circulation rate-of change in special * domains, as the essential variable for intermediate times. $\dot{\Gamma}$, provides essential signatures and quantifiers for understanding, validating and modeling Richtmyer-Meshkov flows. These results are much beyond what the literature now contains$^3$, where the emphasis has been on the buoyancy-drag model and $\dot{a}$. Comparisons will be made with the experiments of Jacobs and colleagues.

References
4. Norman J. Zabusky, Dong-Kee Lee *, Gaozhu Peng. Circulation rate of change, $\partial_t \Gamma$, a new diagnostic for validating and understanding Richtmyer–Meshkov (accelerated inhomogeneous flow) simulations beyond early times. To be submitted, 2004