

Meeting: 1001, Evanston, Illinois, SS 11A, Special Session on Stability Issues in Fluid Dynamics

1001-76-17 **Yuriko Renardy*** (renardyy@math.vt.edu), Department of Mathematics, 460 McBryde Hall,
Virginia Tech, Blacksburg, VA 24061-0123. *PROST: a Parabolic Reconstruction Of Surface
Tension for the volume-of-fluid method.*

Volume-of-fluid (VOF) methods are popular for the direct numerical simulation of time-dependent viscous incompressible flow of multiple liquids. One weakness of past formulations appears when the capillary force is the dominant physical mechanism. The lack of convergence with spatial refinement, or convergence to a solution that is slightly different from the exact solution, has been documented in the literature. A well-known limiting case for this is the existence of spurious currents for the simulation of a spherical drop with zero initial velocity. This talk is on our new algorithm VOF-PROST (a Parabolic Reconstruction Of Surface Tension for the volume-of-fluid method) which effectively eliminates spurious currents for a drop breakup simulation. (Received May 23, 2004)