

Abstract Submitted
for the DFD10 Meeting of
The American Physical Society

A volume-of-fluid interfacial flow solver with advected normals MEHDI RAESSI, University of Massachusetts-Dartmouth, JAVAD MOSTAGHIMI, MARKUS BUSSMANN, University of Toronto, UNIVERSITY OF MASSACHUSETTS-DARTMOUTH TEAM, UNIVERSITY OF TORONTO TEAM — We introduce an implementation of the advecting normals method in a volume-of-fluid interfacial flow solver. The advected normals are used to compute the interface curvature for calculating the surface tension force, and for reconstructing the interface in a volume-conserving volume-of-fluid method. To improve the performance of the method in under-resolved regions of the flow, where normals vary sharply, a curvature-based criterion is used to detect and correct poorly defined normals. We present results of advection as well as actual flow problems and demonstrate that the new method is well suited for problems that involve large interface deformation and breakup.

Mehdi Raessi
University of Massachusetts-Dartmouth

Date submitted: 06 Aug 2010

Electronic form version 1.4