

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Accurate curvature estimates from volume fractions on unstructured meshes using embedded height functions¹ CHRISTOPHER IVEY, PARVIZ MOIN, Stanford University, Center for Turbulence Research — A novel methodology for extracting curvatures from volume fractions on non-convex, unstructured grids is presented. Estimating curvature in volume of fluid methods is difficult due the discontinuous nature of the volume fraction field. On simple structured meshes, height functions can be used to map the volume fraction field to a surface height field that is smooth along the surface. Our algorithm utilizes a local cartesian mesh and a suitable interpolation strategy to harness the height function technique developed for uniform meshes. Accuracy of the algorithm is demonstrated through comparison with the with the reconstructed distance function method on unstructured meshes and with the traditional height function method on uniform meshes of similar grid density.

¹Supported by the DOE CSGF (grant number DE-FG02-97ER25308)

Christopher Ivey
Stanford University, Center for Turbulence Research

Date submitted: 01 Aug 2014

Electronic form version 1.4