

Abstract Submitted  
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**An Improved Advection Scheme for Implicit Interfaces on Cartesian Grids** ZHIPENG QIN, AMIR RIAZ, University of Maryland, ELIAS BALARAS, The George Washington University, KEEGAN DELANEY, Virginia Tech — A new approach is presented to reinitialize the level set function by a direct projection of interface topology. The interface topology is built with the help of 2nd order interpolation reconstruction and interface smoothing by least squares fitting scheme. With the help of three kinds of errors the new approach is shown to both conserve mass and maintain topology during advection. Existing methods for the advection of implicit interfaces, such as classical redistance techniques and interface recompression methods, are compared with the new scheme. The improvement achieved by the new scheme is demonstrated on uniform Cartesian grids for 2D vortex and two-phase incompressible rising bubble cases.

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