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Paraboloid-based models of liquid-gas interfaces from volume fraction data¹ AUSTIN HAN, ROBERT CHIODI, Cornell University, FABIEN EVRARD, Otto von Guericke University Magdeburg, OLIVIER DESJARDINS, Cornell University — In this talk, we investigate the use of semi-analytical volume integration for extracting a paraboloid model of a captured interface in the context of volume of fluid (VOF). In contrast with the height-function (HF) method, which also represents the interface as a paraboloid, we allow for the paraboloid to be arbitrarily rotated, making possible the application of the volume integration to unstructured meshes. We evaluate the performance of the paraboloid model on a range of canonical problems and discuss the calculation of error metrics such as interface normal, curvature, and neighbor-cell volume fraction. Finally, we investigate the robustness of the model to volume fraction error and the reliability of piecewise-linear interface reconstruction (PLIC) information used in the formation of the paraboloid model.

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