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Primary Breakup of a High Speed Liquid Jet WURIGEN BO, XINGTAO LIU, JAMES GLIMM, Stony Brook University — The primary breakup of a high speed jet is studied numerically in 2D and 3D using the front tracking method. We introduce an improved, robust, locally grid based method for reconstruction of tangled interfaces. This method improves the handling of topological change of the surface mesh in the 3D simulations, and is essential for the success of the simulations presented here. From the 2D axisymmetric simulations, we find agreement with experiment in regard to the tip velocity of the jet and its overall degree of breakup or spreading. Due to resolution restrictions, we observe in 3D breakup primarily in the jet tip region and somewhat larger droplets than expected from theory.

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