

Abstract Submitted
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Level Set Modeling of Liquid Breakup by a Supersonic Flow ABDULLAHALMUT SHARFUDDIN, FOLUSO LADEINDE, Stony Brook University — The modeling of liquid breakup by an incompressible gas flow is a well-known problem with numerous applications. However, the high-speed analog of this problem, wherein the liquid is in contact with a gas or gas mixture that flows in the supersonic regime, has not received enough attention, despite the obvious applications in, for example, aerospace propulsion. An algorithm is being developed and tested in our work, for simulating the breakup of bulk liquids in supersonic airflows, wherein the interface is tracked by applying the level set method. In order to handle the hyperbolic character of the gas flow and the presence of shock waves, a special version of the level set approach is being developed to work with the method of characteristics. Results from canonical, but fundamental, applications of the method will be presented.

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