Modeling droplet breakup effects with diffuse interface methods in ALE-AMR code with application in modeling NDCX-II experiments[1]

WANGYI LIU, LBNL, JOHN BARNARD, ALEX FRIEDMAN, NATHAN MASTERS, AARON FISHER, LLNL, ALICE KONIGES, LBNL, DAVID EDER, LLNL

— In this paper we describe an implementation of a single-fluid diffuse interface model in the ALE-AMR hydrodynamics code to simulate surface tension effects. This model works for 2D and 3D. We show simulations and compare them to other surface tension models. We benchmark this code against analytic models that incorporate surface tension (showing agreement with Laplace's equation describing the pressure difference between the interior and exterior of a droplet, for example). We also show how this simulation can be used for modeling the NDCX-II ion beam heated target experiments planned to begin in 2012.

John Barnard
LLNL

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