

Abstract Submitted  
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**Modeling Interaction between Impinging Droplet and Wall with Lattice Boltzmann Method** YONG LI, TIAN TIAN, Massachusetts Institute of Technology — The fluid mechanics of droplet wall interaction is of great importance in many applications. In different parameter range, the results could be totally different depends on the different magnitude of influence among surface tension, inertial force and viscous force. Experiment observation shows many kinds of interactions such as splashing, sticking, rebounding. The Lattice Boltzmann Method has shown promising progress in simulation multiphase flow. But the small density variation requirement limits the parameter range it can model. An enhanced Lattice Boltzmann Method is introduced to extend the applications to large droplet air density ratio ( $\sim 1000$ ) and high velocity ( $\sim 30\text{m/s}$ ) range. The parameter zones associated different phenomenon zones are explored. Modeling results explain the forming mechanisms of phenomena. Using droplet interaction with small feature on solid surface, the model capability is demonstrated.

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