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Simulation of Droplet Collision using Moment of Fluid Method YONGSHENG LIAN, University of Louisville, YONGSHENG LIAN TEAM, YISEN GUO TEAM — Binary droplet collisions were numerically studied. For the present method the interfaces between different phases were captured using the moment of fluid method, a directionally split cell integrated semi-Lagrangian method was used to calculate interface and momentum advection, a projection method was used to calculate pressure, and a block structured adaptive mesh refinement method was used to locally increase the resolution in the regions of interest. Both head-on collisions and oblique collisions were investigated. Droplets of same material and different materials were considered. The effects of droplet size ratio, dimensionless impact parameter, and the Weber number on the collision outcome were systematically investigated. Our results showed that the method can accurately predict the droplet bouncing, reflective separation and coalescence.

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