

Abstract Submitted
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Characterization of primary atomization mechanism of straight liquid jets JUNJI SHINJO, Japan Aerospace Exploration Agency, AKIRA UMEMURA, Nagoya University — Detailed numerical simulations of straight liquid jets have been carried out to elucidate the mechanism of liquid primary atomization. The impact of liquid against the gas forms the umbrella-shaped front where initial atomization occurs subsequently. At later time, surface instability also develops on the liquid core surface, leading to ligament/droplet formation from the core. As the ligament/droplet formation mechanism has been already reported, this study mainly focuses on this surface instability development. Disturbances for instability development come from the front through the recirculating gas flow and from the gas-liquid interaction of the core itself. Several cases are compared to identify the parameter dependence of instability development and the results are compared with the theoretical prediction.

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