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Liquid film on a circular plate formed by a droplet train impingement TOSHIYUKI SANADA, SHOYA YAMAMOTO, Shizuoka University — Droplet impingement phenomena are found in the wide variety of industrial processes, however the detail of liquid film structure formed by the continuous impact of droplets is not clarified. In this study, we experimentally investigated behavior of liquid film which was formed by a droplet train impact. Especially, we focus on the diameter of hydraulic jump formed on a circular plate. The effects of nozzle diameter, liquid surface tension and liquid flow rate on the jump diameter were investigated. In addition, we compared the liquid film by the droplet train impact with that by a liquid column impact. As a result, the hydraulic jump was observed under the smaller water flow rate condition compare to the liquid column impact. And the jump diameters for the case of droplet train impact were greater than that of liquid column impact. However, the jump diameters for the small surface tension liquid for the case of droplet train impact were smaller than that of liquid column impact. We consider that this phenomenon is related to both high speed lateral flow after droplet impact and splash formation. In addition, the liquid film heights after hydraulic jump on a small circular plate were sensitive to either the droplet train impact or liquid column impact.

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