

Abstract Submitted  
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**Light Field Imaging of Turbulent Liquid Sheet Breakup in Air**  
BARRY SCHARFMAN, ALEXANDRA TECHET, MIT, Dept. of Mechanical Engineering — The atomization of an unsteady turbulent sheet of water in air was analyzed using a combination of light field imaging (LFI) and synthetic aperture (SA) refocusing techniques. This sheet collides with and initially flows along a solid inclined plate, and imaging was performed in the region where breakup and separation from the plate begins. Ligaments and droplets emanate from the sheet and break off due to capillary instabilities. Image volumes consisting of these flow features, as well as segments of the liquid sheet body, were captured using a multiple CCD sensor array consisting of ten cameras arranged in three rows. Synthetic aperture refocusing techniques were applied to the raw camera array images, each with large depths of field, to obtain a stack of post-processed images, with narrow depth of field, where each image in the stack is located on a specific focal plane. Feature shapes and spatial distributions have then been extracted from the refocused image volumes.

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