Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

The statistical characteristics of rain-generated stalks on water surface XINAN LIU, REN LIU, JAMES H DUNCAN, University of Maryland, College Park — Laboratory measurements of the stalks generated by the impact of raindrops are performed in a 1.22-m-by-1.22-m water pool with a water depth of 0.3 m. Simulated raindrops are generated by an array of 22-gauge hypodermic needles that are attached to the bottom of an open-surface rain tank. The raindrop diameter is about 2.6 mm and the height of the rain tank above the water surface of the pool is varied from 1 m to 4.5 m to provide different impact velocities. A number of parameters, including the diameter, height and initial upward velocity of the center jets (stalks) are measured with a cinematic laser-induced- fluorescence technique. It is found that the maximum potential energy of the stalk and the joint distribution of stalk height and diameter are strongly correlated to the impact velocities of raindrops. Comparisons between the rain experiments and single drop impacts on a quiescent water surface are also shown.

Xinan Liu
University of Maryland, College Park

Date submitted: 30 Jul 2017 Electronic form version 1.4