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Continuous impact of microdrops on a liquid pool JAE HONG LEE, SEUNGHO KIM, HO-YOUNG KIM, Seoul Natl Univ — A single liquid drop impacting on a liquid pool generates a hemispherical crater, while impact of a stream of microdrops leads to a severely elongated crater whose depth can reach hundreds times the diameter of the impacting drop. Here we investigate experimentally and theoretically the evolution of the crater formed by continuous impact of microdrops, or a drop train. The crater is observed to elongate only up to a certain length at a constant rate and then be pinched off near the pool surface to convert into a cusp. We rationalize the constant elongation rate by assuming the crater growth as a superposition of crater formation due to individual drops. Also, we predict the maximum depth of the crater as a function of liquid properties and diameter, impact velocity and frequency of drops. Finally, we theoretically model the cusp shape, which agrees well with experiment.

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