Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Splash control of drop impacts using small geometric targets GABRIEL JUAREZ, PAULO E. ARRATIA, University of Pennsylvania — We present the results of an experimental investigation on the impact of droplets with solid planar surfaces that are of the same dimension as the drop diameter. This experimental configuration allows us to examine the splashing process as governed only by inertial and capillary forces. The cross sectional areas of the targets are regular polygons and the number of sides (N) varies from 3 to 10. Splashing results for polygon targets are compared to splashing on a cylindrical post, the limiting case of infinite sides. Upon impact, we observe that the splash radius increases exponentially in time. We also find that for particular geometrical shapes ($N < 8$), it is possible to influence splashing process. The resulting splash resembles the shape of the target with a rotation equal to $180/N$. The breakup of the lamella into secondary jets is accurately controlled and equal to the number of vertices. For targets with more than 8 sides, the splash becomes irregular and does depend on target shape.

Gabriel Juarez
University of Pennsylvania

Date submitted: 12 Aug 2011 Electronic form version 1.4