Jetting from impact of a spherical drop with a deep layer

LI ZHANG, JAMESON TOOLE, Department of Physics & Center for the Study of Complex Systems, University of Michigan, Ann Arbor, MI 48109 USA, KAMEL FAZZAA, X-Ray Science Division, Argonne National Laboratory, Argonne, IL 60439, USA, ROBERT DEEGAN, Department of Physics & Center for the Study of Complex Systems, University of Michigan, Ann Arbor, MI 48109 USA, DEEGAN GROUP TEAM, X-RAY SCIENCE DIVISION, ADVANCED PHOTON SOURCE COLLABORATION — We performed an experimental study of jets during the impact of a spherical drop with a deep layer of same liquid. Using high speed optical and X-ray imaging, we observe two types of jets: the so-called ejecta sheet which emerges almost immediately after impact and the lamella which emerges later. For high Reynolds number the two jets are distinct, while for low Reynolds number the two jets combine into a single continuous jet. We also measured the emergence time, speed, and position of the ejecta sheet and found simple scaling relations for these quantities.

Li Zhang
Department of Physics & Center for the Study of Complex Systems,
University of Michigan, Ann Arbor, MI 48109 USA