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Kinematics of the interface in the near field of homogeneous and immiscible turbulent jets ERIC IBARRA, UC Berkeley, FRANKLIN SHAFFER, NETL, OMER SAVAS, UC Berkeley — The near field interfaces of turbulent discharges carry clues that can help determine overall discharge rate. The work being presented here concentrates on characterization of the turbulent features visible at the interface. The analysis focuses on utilizing images of the discharge to estimate an interface length scale using correlations along the axis of the discharge. Length scales akin to the Taylor scale show monotonic behavior soon after the discharge location. An analysis of the curvature spectra of the features is also investigated; this is accomplished through the segmentation of a continuous jet into curves that are parametrically represented to evaluate their curvatures. The interface of immiscible jets consists predominately of droplets and ligaments; the length scales along with their dynamics of these structures are explored. These techniques were used to investigate homogeneous water jets, ranging from $Re \sim 4,500 - 50,000$, and silicon oil jets in water, ranging from $Re \sim 3,500 - 27,000$.

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