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Dynamics of Liquid Sheet Breakup in the Presence of Acoustic Excitation

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Highlights

- Effect of external acoustic excitation on the liquid sheet breakup is investigated experimentally in the context of impinging jet injectors used in liquid rocket combustors.
- Visualization studies reveal sheet distortion, violent sheet flapping, wave amplification and the local increase in droplet density.
- Reduction in the sheet breakup length and width occurs at few selected frequencies, not multiples of each other, ruling out the resonance phenomenon.
- The mean drop size decreases in the presence of acoustic field without altering the universal behavior of drop size distribution.

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