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**On the breakup of non-circular liquid jets** T.V. KASYAP, D. SIVAKUMAR, B.N. RAGHUNANDAN, Indian Institute of Science, Bangalore 560012, India — It is well known that liquid jets discharging from non-circular orifices show interesting geometrical transformations on their free surface due to the competition between inertia and surface tension forces. A typical example is the axis-switching phenomenon observed on elliptical liquid jets. In this work, we present some hitherto unknown results obtained on the breakup of liquid jets issuing from elliptical, triangular and circular orifices of various geometric parameters but of same cross sectional area. Photographic techniques were employed to record the images of jets and relevant quantities like breakup length were measured from the photographs. The results show that elliptical and triangular jets behave exactly like the circular jet at very low and very high jet velocities. However within an intermediate range of flow conditions, liquid jets from these non-circular orifices show an enhanced destabilization which shortens their breakup lengths in comparison with the circular jet. We suggest that this is caused by the geometrical transformations on their free surface due to which there is more surface energy, making them less stable.

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