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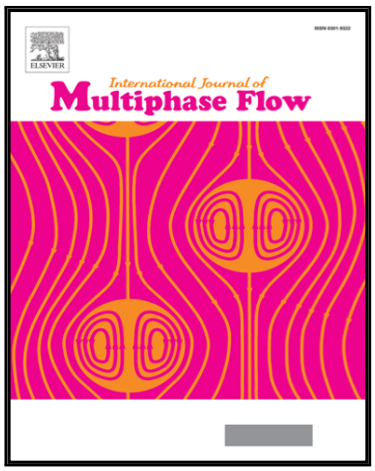

Direct numerical simulation of droplet breakup in homogeneous isotropic turbulence: the effect of the Weber number

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Highlights

- We report the direct numerical simulation of droplet breakup in forced homogeneous isotropic turbulence with a mass-conserving level set method.
- Compared with the flow local topology in the carrier-phase turbulence, the local topology of the bi-axial strain is suppressed at the statistical stationary state inside the droplet.
- During the droplet breakup process, the vorticity tends to be tangent to the large-scale interface at the early stage, and subsequently the alignment is mitigated for large Weber numbers.

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