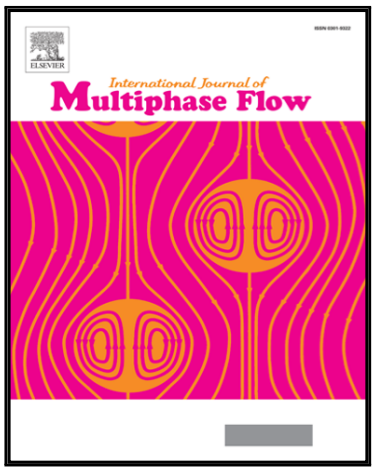

Analysis on the Effects of Turbulent Inflow Conditions on Spray Primary Atomization in the Near-Field by Direct Numerical Simulation

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Highlights

- A synthetic boundary condition for turbulence has been successfully implemented in the open source code DNS Paris-Simulator.
- Once implemented, the spray primary atomization process has been simulated for three cases with different levels of turbulence, quantified by the lengthscale and the turbulence intensity.
- Results from the simulations have been compared in terms of vorticity field, external non-perturbed length and intact core length which are directly related to the atomization level.
- Results reflect that atomization is greatly improved when the turbulence intensity and turbulence lengthscale are increased.
- The different atomization processes, occurring in different spray locations have been analyzed