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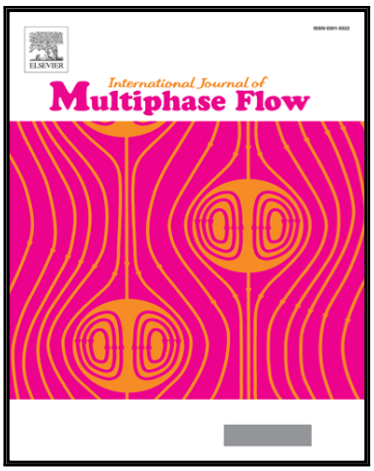

Air-Water Flow Properties in Stepped Chutes with Modified Step and Cavity Geometries

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Highlights

- Extensive experimental investigation on air-water flow properties in stepped chutes with flat steps, partially blocked step cavities, and chamfers;
- Synchronised two-phase and total pressure measurements allowed individual examinations of air- and water-phase flow structures;
- A demarcation between turbulent flow features was found about where the void fraction was approximately 0.5;
- Partial cavity blockage reduces mutual sheltering between adjacent steps and leads to an increased presence of large-scale turbulent features in the mainstream;
- Chamfers results in a visually smooth overflow and air entrainment appears less intense.

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