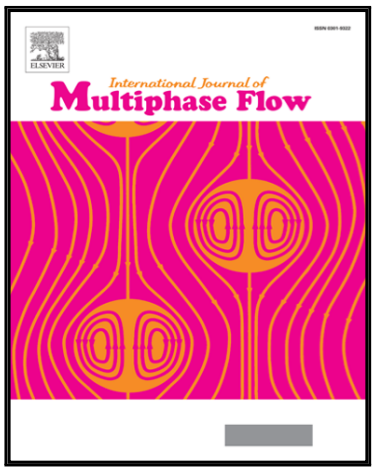

Manipulating Cavitation by a Wall Jet: Experiments on a 2D Hydrofoil

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Highlights

- The low-speed ($U_{inj}/U_0 < 1$) injection can mitigate cavitation, delaying the evolution of cavitating flow regime and suppressing the development of flow instabilities
- The low-speed injection simultaneously causes an increase of the turbulence intensity over the hydrofoil surface, which increases its drag and impairs its hydrodynamic quality
- The high-speed ($U_{inj}/U_0 > 1$) injection is more preferable from the hydrodynamic standpoint but makes the flow more cavitation-prone
- In unsteady regimes, the wall jet turns out to be mostly ineffective to suppress flow instabilities but can substantially reduce the amplitude of pressure pulsations
- At high attack angles, a sheet cavity on the hydrofoil with the slot channel exhibits intermittent length variations due to superposition of instabilities