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On axial deformation of ventilated supercavities in closed-wall tunnel experiments

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ABSTRACT

In this study, the deformation of supercavity shapes due to tunnel-wall blockage effects was explored in the medium-sized high-speed cavitation tunnel at the Korea Research Institute of Ships and Ocean Engineering (KRISO). It was observed that maximum cavity diameter is affected less than cavity length by experimental conditions. We adopt a new convention for specifying the cavity dimensions; namely, the cavity diameter at the first peak on the lower cavity outline is defined as the maximum cavity diameter. This enables one to exclude the shape deformations caused by tunnel walls when extrapolating experimental cavity dimensions to the equivalent cavities that would occur in unbounded flows.

Keywords

Supercavitation, Ventilation, Cavitation tunnel, Blockage, Shape deformation

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