

Abstract Submitted  
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**Ventilated supercavitation around a moving body in a still fluid<sup>1</sup>**

JAEHO CHUNG, YEUNWOO CHO, Korea Advanced Institute of Science and Technology (KAIST) — Present experimental study examines ventilated supercavity formation in an unbounded or free-surface bounded environment where the body is in motion and the fluid is at rest. The experiments were conducted in an open water tank where a high-speed towing system (max. 10m/s) is adopted to move an underwater axisymmetric ellipsoidal body with a certain speed. The body has a disk-type cavitator on its nose and compressed air is ventilated radially between the nose and the cavitator. Various steady-state supercavity formations are observed according to relevant Froude numbers, the air entrainment coefficients, and the cavitation numbers; twin-vortex supercavity (TV), reentrant-jet supercavity (RJ), partial supercavity with foamy cavity downstream (PSF), partial supercavity with shedding of continuous vortex rings downstream (PSV), double-layer supercavity (RJ inside & TV outside, TV inside & TV outside, RJ inside & RJ outside). Connected with this behavioral observation, the body-frontal-area based drag coefficient for a moving ellipsoidal body with a supercavity is measured to be on the order of 0.1 while that for a cavitator-free moving body without supercavity is on the order of 0.4.

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Yeunwoo Cho  
Korea Adv Inst of Sci  
Tech

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