

Computation of Hydrodynamic Coefficients of Portable Autonomous Underwater Vehicle

***J. Jiang¹, Y. Shi, and G. Pan**

College of Marine Engineering, Northwestern Polytechnical University, China.
127 Youyi west St, Beilin Dist, Xi'an City, China

*Corresponding author: jiangjun@nwpu.edu.cn

Hydrodynamic coefficients in the motion equations of any underwater vehicle are inherent characteristics of the body geometry, the geometry and location of control surfaces and other appendages and separation of centers of gravity and buoyancy. This paper reports the prediction of values of straight-line hydrodynamic coefficients for a portable autonomous underwater vehicle (PAUV) by using empirical methods and Computational Fluid Dynamics (CFD), which is being developed by Northwestern Polytechnical University for ocean reconnaissance. At the same time, hydrodynamic coefficients test results in wind tunnel are shown in this paper. And computational results by empirical methods and CFD are compared with experimental results from wind tunnel tests of the same PAUV. It is proved that the trends in variation of forces and moments are captured well by CFD.

Keywords: PAUV, Hydrodynamic coefficient, CFD, Wind tunnel