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Numerical Analysis of the Turbulent Flow around DTMB 4119 Marine Propeller

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Abstract : This article presents a numerical analysis of a turbulent flow past DTMB 4119 marine propeller by the means of RANS approach; the propeller designed at David Taylor Model Basin in USA. The purpose of this study is to predict the hydrodynamic performance of the marine propeller, it aims also to compare the results obtained with the experiment carried out in open water tests; a periodical computational domain was created to reduce the unstructured mesh size generated. The standard kw turbulence model for the simulation is selected; the results were in a good agreement. Therefore, the errors were estimated respectively to 1.3% and 5.9% for KT and KQ.

Keywords : propeller flow, CFD simulation, RANS, hydrodynamic performance
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