Numerical Study of the Hydroacoustic Characteristics of a Marine Propeller VIJAYAKUMAR RAJAGOPALAN, VIJIT MISRA, DANIO JOE, Indian Institute of Technology Madras — Propulsion of surface and under water ships with low noise characteristics depends on a number of factors in terms of their safety and operational performances, and it is crucial to predict and control their underwater noise characteristics. In this respect, the main scope of this study is to calculate numerically the propeller noise, which is one of the main sources of underwater noise. Therefore, propeller noise is studied numerically for non-cavitating conditions. Flow around the propeller is solved with a commercial CFD software, while hydro-acoustic analysis is performed using a model based on Ffowcs Williams-Hawking equation. Flow around a propeller is solved using a RANS solver with the SST k-? turbulence model. Then, transient solution is performed with second order implicit pressure-based solver. Velocity and pressure coupled via SIMPLE algorithm Numerical Methods and Flow Solver. Time dependent pressure data is used as the input for the FWH equation to predict far-field acoustics.

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