

Abstract Submitted  
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**Analysis of rotor noise using LES<sup>1</sup>** JACOB KELLER, PRAVEEN KUMAR, KRISHNAN MAHESH, University of Minnesota — The flow field of a five-bladed marine propeller operating at design condition, obtained using large eddy simulation (LES), is used to calculate far-field sound. Three acoustic formulations are used: a point force dipole model, Curle acoustic analogy, and Ffowcs–Williams and Hawkings acoustic analogy. Each formulation is derived from the Navier–Stokes equations and the effects of the underlying assumptions are examined. The acoustic surface for the Curle and Ffowcs–Williams and Hawkings acoustic analogies is chosen to be the propeller; the propeller is split into a collection of acoustically compact radial strips. The computed sound is analyzed and the physics of sound generation is inspected. Results including far-field sound spectra and directivity will be discussed.

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