Large-eddy simulation of propeller noise[1] JACOB KELLER, KRISH-
NAN MAHESH, Univ of Minnesota - Twin Cities — We will discuss our ongoing
work towards developing the capability to predict far field sound from the large-eddy
simulation of propellers. A porous surface Ffowcs-Williams and Hawkings (FW-H)
acoustic analogy, with a dynamic endcapping method (Nitzkorski and Mahesh,2014)
is developed for unstructured grids in a rotating frame of reference. The FW-H sur-
face is generated automatically using Delaunay triangulation and is representative
of the underlying volume mesh. The approach is validated for tonal trailing edge
sound from a NACA 0012 airfoil. LES of flow around a propeller at design advance
ratio is compared to experiment and good agreement is obtained. Results for the
emitted far field sound will be discussed.
Nitzkorski and Mahesh, Phys. Fluids, 2014, 26(11):115101

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