Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Unsteady Propulsors in Ground Effect[1] KEITH MOORED, Lehigh University, DANIEL QUINN, PETER DEWEY, Princeton University, ALEXANDER SMITS, Princeton University, Monash University — Experimental and computational results are presented on an airfoil undergoing pitch oscillations in ground effect, that is, close to a solid boundary. The time-averaged thrust is found to increase monotonically as the mean position of the airfoil approaches the boundary while the propulsive efficiency stays relatively constant, showing that ground effect can enhance thrust at little extra cost for a pitching airfoil. Vortices shed into the wake form pairs rather than vortex streets, so that in the mean a momentum jet is formed that angles away from the boundary.

[1]Supported by the Office of Naval Research under Program Director Dr. Bob Brizzolara, MURI grant number N00014-08-1-0642.

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Date submitted: 02 Aug 2013 Electronic form version 1.4