Abstract Submitted
for the DFD12 Meeting of
The American Physical Society

Swimming Near the Wall[1] DANIEL QUINN, KEITH MOORED, PETER DEWEY, Princeton University, GEORGE LAUDER, Harvard University, ALEXANDER SMITS, Princeton University — The aerodynamic loads on rectangular panels undergoing heave and pitch oscillations near a solid wall were measured using a 6-axis ATI sensor. Over a range of Strouhal numbers, reduced frequencies and flexibilities, swimming near the wall was found to increase thrust and therefore the self-propelled swimming speed. Experimental particle image velocimetry revealed an asymmetric wake structure with a momentum jet angled away from the wall. Both the thrust amplification and the asymmetric wake structure were verified and investigated further using an in-house inviscid panel method code.

[1]Supported by ONR MURI Grant N00014-08-1-0642

Daniel Quinn
Princeton University

Date submitted: 02 Aug 2012 Electronic form version 1.4