Abstract Submitted
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Volumetric flow around a swimming lamprey[1] ANDREA M. LEHN, MIT, SEAN P. COLIN, Roger Williams University, JOHN H. COSTELLO, Providence College, MEGAN C. LEFTWICH, GWU, ERIC D. TYTELL, Tufts University — A primary experimental technique for studying fluid-structure interactions around swimming fish has been planar dimensional particle image velocimetry (PIV). Typically, two components of the velocity vector are measured in a plane, in the case of swimming studies, directly behind the animal. While useful, this approach provides little to no insight about fluid structure interactions above and below the fish. For fish with a small height relative to body length, such as the long and approximately cylindrical lamprey, 3D information is essential to characterize how these fish interact with their fluid environment. This study presents 3D flow structures along the body and in the wake of larval lamprey, *Petromyzon marinus*, which are 10-15 cm long. Lamprey swim through a 1000 cm^3 field of view in a standard 10 gallon tank illuminated by a green laser. Data are collected using the three component velocimeter V3V system by TSI, Inc. and processed using Insight 4G software. This study expands on previous works that show two pairs of vortices each tail beat in the mid-plane of the lamprey wake.

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