

Fauci, Lisa J.; Peskin, Charles S.

A computational model of aquatic animal locomotion. (English) Zbl 0641.76140
J. Comput. Phys. 77, No. 1, 85-108 (1988).

Summary: A computational model of the swimming of a neutrally buoyant organism undergoing deformations within a region of fluid is presented. The fluid is regarded as viscous and incompressible and the organism as a massless, elastic boundary immersed in this fluid. Fluid quantities are represented on a grid (Eulerian description), and the immersed boundary is represented by a discrete collection of moving points (Lagrangian description). Computed results are presented, along with comparisons with previous asymptotic analysis.

MSC:

76Z10 Biopropulsion in water and in air
92B05 General biology and biomathematics

Cited in **96** Documents

Keywords:

model of the swimming; neutrally buoyant organism; massless, elastic boundary; Eulerian description; Lagrangian description; asymptotic analysis

Full Text: [DOI](#)

References:

- [1] Lighthill, J.L., ()
- [2] Childress, S., *Mechanics of swimming and flying*, (1981), Cambridge Univ. Press London · [Zbl 0499.76118](#)
- [3] Taylor, G.I., (), 447
- [4] Tuck, E.O., *J. fluid mech.*, 31, 305, (1968)
- [5] Peskin, C.S., *J. comput. phys.*, 25, 220, (1977)
- [6] Chorin, A.J., *Math. comput.*, 22, 745, (1968)
- [7] Dennis, J.E.; Schnabel, R.E., *Numerical methods for unconstrained optimization and nonlinear equations*, (1983), Prentice-Hall Englewood Cliffs, NJ · [Zbl 0579.65058](#)
- [8] Fauci, L., (), (unpublished)

This reference list is based on information provided by the publisher or from digital mathematics libraries. Its items are heuristically matched to zbMATH identifiers and may contain data conversion errors. It attempts to reflect the references listed in the original paper as accurately as possible without claiming the completeness or perfect precision of the matching.