Abstract Submitted
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Fluid transport by an unsteady microswimmer[1] PETER MUELLER, JEAN-LUC THIFFEAULT, University of Wisconsin - Madison — We study the drift caused by the microscopic algae *Chlamydomonas reinhardtii*. This microorganism swims by rapidly beating two frontal flagella. Previous studies of transport by microswimmers have neglected the ubiquitous time-dependence of their swimming. We model the organism by a time-dependent dumbbell consisting of two regularized Stokeslets. We study individual particle paths and their displacements in a region around the swimmer. Of particular interest are particle trajectories that remain trapped near the swimmer, forming the so-called "atmosphere" of the moving body. Atmospheres are common in the steady case, and they persist for unsteady motion though their size is reduced due to broken barriers. We vary the parameters in our model to determine their effect on the size and shape of the atmosphere. Finally we determine the importance of this atmosphere on overall fluid transport and mixing.

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