

Abstract Submitted
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Microorganism Billiards COLIN WAHL, JOSEPH LUKASIK, SAV-
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— The presence of boundaries can have many different consequences on the loco-
motion of microorganisms. Recent experiments and numerical simulations have shown
that certain types of microorganisms have a particular interaction with a wall: either
through active (flagellar contact with the surface) or passive (hydrodynamic) inter-
actions, the body rotates away from the surface and then departs at a critical angle.
We explore the billiard-like motion of such a body as it swims in confined domains.
The dynamics of swimming inside a regular polygon is characterized, where stable
periodic or unstable chaotic trajectories are determined by the angle of departure.
We also explore the dynamics of swimming in an array of obstacles. The results
may provide insight on entrapment and sorting of microorganisms and other active
particles.

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