

Abstract Submitted  
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**Symmetry breaking: Swimming beneath free surfaces, Part 1**  
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DARREN CROWDY, MIT — The Scallop Theorem states that time-reversible motion cannot produce net propulsion in Stokes flow. One method for a swimmer to get around this theorem and propel itself is by using deformations of a free surface to break symmetry. We present here a simplified 2D swimmer, modeled as a stresslet point singularity plus a dipole. We obtain exact analytic solutions using conformal mapping techniques to describe the interplay between the swimmer and the free surface.

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