

Abstract Submitted
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Swimming in pairs at intermediate Reynolds numbers¹ THOMAS DOMBROWSKI, DAPHNE KLOTSKA, University of North Carolina at Chapel Hill — We computationally investigate pairwise interactions at intermediate Reynolds numbers (Re) between simple, reciprocal dumbbell swimmers each composed of two unequally sized spheres. For nonzero Re , our reciprocal swimmer swims small-sphere-leading and interestingly, as Re increases, switches its swimming direction to large-sphere-leading. We vary the separation distance, angle, and phase difference between the swimming pair, and we find several regimes of long-time behavior including different steady pair configurations, bi-stable pairs, spontaneous rotation, and divergence. We also discover configurations where the pair behaves completely different from the single swimmer. Averaged flow fields are analyzed to further understand these stable configurations.

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