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Symmetry and Hydrodynamic Interactions of Linked-Sphere Swimmers GARETH ALEXANDER, University of Pennsylvania, JULIA YEO-MANS, University of Oxford — The motile behavior of micron-sized organisms offers an insight into a physical environment very different to our own. Micron length scales correspond to low Reynolds number conditions where viscous forces dominate over the effects of inertia [1]. A topic of growing interest is the role played by hydrodynamic interactions, both with confining walls and between organisms as a means to generate collective motility. We shall describe the form and properties of swimmer-swimmer interactions for simple models consisting of a small number of linked-spheres [2,3]. These interactions do not follow the naively expected dipolar form and moreover exhibit a strong sensitivity to the relative phase of the swimmers. Several of these features have a natural interpretation in terms of the kinematic reversibility of Stokes flows and we shall describe in particular an exact result for the scattering of two swimmers related by time reversal. [1] G. I. Taylor, Proc. R. Soc. A 209, 447 (1951); 211, 225 (1952). [2] A. Najafi and R. Golestanian, Phys. Rev. E 69, 062901 (2004). [3] C. M. Pooley, G. P. Alexander, and J. M. Yeomans, Phys. Rev. Lett. 99, 228103 (2007).

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