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Hydrodynamic interaction between two helical swimmers ALEJANDRO RUIZ ESPARZA, FRANCISCO GODINEZ, Universidad Nacional Autonoma de Mexico, ERIC LAUGA, University of Cambridge, ROBERTO ZENIT, Universidad Nacional Autonoma de Mexico — Many motile bacteria, such as E. coli, possess several helical flagellar filaments that bundle together to form a coherent helical element for propulsion. In order to understand the process of bundling, we study the interaction between two identical helical magnetic swimmers that self propel in a highly viscous Newtonian fluid due to the rotation of an external magnetic field. Our experiments reveal that hydrodynamic interactions lead to nontrivial collective and relative effects, both in translation and rotation. We will present our experimental results and discuss the physical mechanisms responsible for our observations.

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