Name:	**Yuto Hosaka**	
Affiliation:	Department of Living Matter Physics (Director: Prof. Ramin Golestanian), Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany	
Email:	yuto.hosaka@ds.mpg.de, yutohosaka24653@gmail.com	
Academic degree:	PhD in Chemistry, Tokyo Metropolitan University, Tokyo, Japan (2022)	
Professional Experience:	2022 – Postdoctoral Researcher at Department of Living Matter Physics, Max Planck Institute for Dynamics and Self-Organization, Göttingen, Germany	
Current Research:	Active Matter with a particular focus on hydrodynamics induced by enzymes, odd viscous and elastic materials, and nonequilibrium rheological properties	

Pair dynamics of active force dipoles in an odd-viscous fluid

Yuto Hosaka[1], Shigeyuki Komura[2,3,4], and David Andelman[5]

[1] Max Planck Institute for Dynamics and Self-Organization (MPI DS), Germany

[2] Wenzhou Institute, University of Chinese Academy of Sciences, China,

[3] Oujiang Laboratory, China,

[4] Department of Chemistry, Graduate School of Science, Tokyo Metropolitan University, Japan,

[5] School of Physics and Astronomy, Tel Aviv University, Israel

We discuss the lateral dynamics of two active force dipoles that interact with each other via hydrodynamic interactions in a thin fluid layer that is active and chiral. The fluid layer is modeled as a two-dimensional (2D) compressible fluid with an odd viscosity, while the force dipole (representing an active protein) induces a dipolar flow. Considering the momentum decay in the 2D fluid, we obtain analytically the mobility tensor that depends on the odd viscosity and includes nonreciprocal hydrodynamic interactions. In the limit of infinitely large odd viscosity, two types of oscillatory behaviors are seen, one of which can be understood as arising from closed orbits in dynamical systems and its circular trajectories are determined by the ratio between the magnitude of the odd viscosity and the force dipole. Our findings reveal that the nonreciprocal response leads to complex dynamics of active particles embedded in an active fluid with odd viscosity.