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Collective motion of interacting particles in spatially coherent flow NIDHI KHURANA, NICHOLAS T. OUELLETTE, Yale University — Previous studies have shown that background flows can significantly modify the dynamics of independent active particles. In this work, we investigate how a spatially coherent turbulent-like flow modifies the collective behavior of interacting particles. We consider spherical point-like particles that interact according to a standard collective motion model. The particles move with a constant intrinsic speed but with a direction that depends on their neighbors. In addition, they are advected by a strongly fluctuating, multiscale flow field generated by kinematic simulation. By varying the relative strength of the intrinsic particle speed and the background flow, we study the effects of the complex flow field on the collective behavior of the particles.

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