

Abstract Submitted
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Hydrodynamics of Turning Flocks¹ XINGBO YANG, M. CRISTINA MARCHETTI, Syracuse University — We present a hydrodynamic model of flocking that generalizes the familiar Toner-Tu equations to incorporate turning inertia of well polarized flocks. The continuum equations are derived by coarse graining the inertial spin model recently proposed by Cavagna et al. The interplay between orientational inertia and bend elasticity of the flock yields spin waves that mediate the propagation of turning information throughout the flock. When the inertia is large, we find a novel instability that signals the transition to complex spatio-temporal patterns of continuously turning and swirling flocks.

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