

Abstract Submitted
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Emergent Structures in an Active Polar Fluid: Dynamics of Shape, Scattering and Merger KABIR HUSAIN, MADAN RAO, National Centre for Biological Sciences — Spatially localised defect structures emerge spontaneously in a hydrodynamic description of an active polar fluid comprising polar 'actin' filaments and 'myosin' motor proteins that (un)bind to filaments and exert active contractile stresses. These emergent defect structures are characterized by distinct textures and can be either static or mobile - we derive effective equations of motion for these 'extended particles' and analyse their shape, kinetics, interactions and scattering. Depending on the impact parameter and propulsion speed, these active defects undergo elastic scattering or merger. Our results are relevant for the dynamics of actomyosin-dense structures at the cell cortex, reconstituted actomyosin complexes and 2D active colloidal gels.

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