

Abstract Submitted  
for the DFD16 Meeting of  
The American Physical Society

**Multi-scale analysis of active turbulence in living fluids** AMIN DOOSTMOHAMMADI, University of Oxford, JAVIER URZAY, Stanford University, JULIA YEOMANS, University of Oxford — Pattern formation in biological fluids manifests in the form of spatio-temporal chaos and is considered as a new class of turbulent flows. Here, we investigate the similarities and distinctions between turbulent-like flows in living fluids at low Reynolds numbers and classic high-Reynolds turbulence using multi-scale statistical tools. Turbulent characteristics of active flows are compared in two and three dimensions. In particular, we quantify the intermittency of meso-scale turbulence and explore energy cascades in two and three dimensions. Energy fluxes associated with viscous dissipation and local energy injection from active particles are quantified, shedding light on inter-scale phenomena in chaotic biological fluids.

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Date submitted: 01 Aug 2016

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