

DY 4: Talk D. Bartolo

Time: Monday 9:30–10:00

Location: BH-N 243

Invited Talk

DY 4.1 Mon 9:30 BH-N 243

Sounds and stubbornness of active fluids. — •DENIS BARTOLO, DELPHINE GEYER, and ALEXANDRE MORIN — ENS de Lyon, Lyon, France

I will first show how to engineer spontaneously flowing colloidal liquids. Simply put our strategy consists in letting self-propelled colloids with velocity-alignment interactions to collide in microfluidic channels. After a short transient they self-assemble into liquids with emergent long-range orientational order which translates into spontaneous unidi-

rectional flows. I will devote most of my talk to discussing the fluctuations and the dynamical response of these intrinsically non equilibrium materials. (i) I will show that both density and velocity fluctuations almost freely propagate along all directions and exploit these sound modes to infer the analogous of the Navies Stokes equation for polar active liquids. (ii) I will discuss the robustness of their spontaneous flows to external pressure gradients. I will evidence that (french) colloids can be collectively very resistant when one tries to waive their privilege to freely choose their direction of motion.