Abstract Submitted
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Glassy dynamics of self-propelled particles: computer simulations and a mode-coupling-like theory[1] GRZEGORZ SZAMEL, ELIJAH FLENNER, Department of Chemistry, Colorado State University, LUDOVIC BERTHIER, Laboratoire Charles Coulomb, Universite Montpellier II — We use a combination of computer simulations and theory to elucidate glassy dynamics of self-propelled particles. We compare the relationship between the steady state structure of the self-propelled system and its long-time dynamics with that of an equilibrium Brownian system. We find that an athermal self-propelled system can have a more pronounced local structure but faster relaxation than a similar equilibrium system. Interestingly, the dependence of the dynamics on the persistence time of the self-propulsion can be non-monotonic, with the dynamics speeding up and then slowing down with increasing persistence time. We show that these effects are captured by a mode-coupling-like theory.

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