Collective Dynamics Of Active Particles In Confinement

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Active matter comprises particles that self-propel by consuming energy. Unlike equilibrium systems, these particles exhibit a rich array of collective behaviors. This study focuses on the dynamics of Active Ornstein-Uhlenbeck Particles (AOUP) in the presence of an external potential.¹ Our goal is to elucidate the distinctions between the behavior of these active particles and their passive counterparts, particularly in terms of length and time scales.² Additionally, we aim to characterize the steady-state phases and collective dynamics arising in these systems under the influence of the external potential.³

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¹Caprini, Cecconi, and Marini Bettolo Marconi, *The Journal of Chemical Physics* **155**, 23 (2021). ²Caprini et al., *The Journal of Chemical Physics* **150**, 2 (2019).

³Ramaswamy, Journal of Statistical Mechanics: Theory and Experiment 2017, 5, 054002 (2017).