

We thank the reviewers for their helpful comments, which have helped us improve the paper. Our reply is structured as follows. We first discuss general changes to the manuscript, and then respond to the reviewers' comments one-by-one.

1 General Changes

1. We

2 Response to Reviewer #1

1. ω_{\max} and ω_{\min} are chosen as 3 and 1, respectively. How do the results change for different choices of ω_{\max} and ω_{\min} ?

(Outer/Inner) Radius of circling state & clustering state vs. ω_{\max} and ω_{\min} .

2. Whether the results are independent of the nature of the frequency distributions such as Lorentzian, and Gaussian? These will illustrate the generic nature of the results.

- Gaussian (Running)
- Lorentzian

3. Similar collective states that involve circling and clustering behavior and hybrid states have already been reported in the literature [1, 2]. Hence, the novel collective behavior particular to this model should be clearly stated to appreciate the merit of the manuscript.

4. Since the additive type of coupling is considered, How does the number of swarmalators (N) influence the collective dynamics?

The derivation results of the critical conditions between states have already included population (N).

5. Noise plays a crucial role in swarming models [3]. Are the observed collective states robust with respect to noise? It would be interesting to know how noise reshapes collective behavior.

- Let a system containing noise evolve from a uniform initial state, then observe its long-term behavior.
- Using the long-term solutions obtained from a noiseless system as the initial condition for a system containing noise, test the robustness of the Collective states with respect to noise.

- [1] Ceron, S., O'Keeffe, K., & Petersen, K. (2023). Diverse behaviors in non-uniform chiral and non-chiral swarmalators. Nature Communications, 14(1), 940.
- [2] Liebchen, B., & Levis, D. (2017). Collective behavior of chiral active matter: Pattern formation and enhanced flocking. Physical review letters, 119(5), 058002.