Stochastic Cucker-Smale model: collision-avoidance and flocking

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In this talk, we consider the Cucker-Smale flocking model involving both singularity and noise. We first show the local strong well-posedness for the system, in which the communication weight is locally Lipschitz beyond the origin. Then, for the special case that the communication weight has a strong singularity at the origin, we establish the global well-posedness by showing the finite time collision-avoidance. Finally, we study the large time behavior of the system when the communication weight is of zero lower bound. The conditional flocking emerges for the case of constant noise intensity, while the unconditional flocking emerges for various time-varying intensities and long-range communications. This is a joint work with X. Zhang.

This submission is for a invited session