

Convergence to consensus of a Cucker-Smale model with time delay

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We describe a Cucker-Smale model with normalized communication weights and distributed time delay. By means of a Lyapunov functional approach we deduce asymptotic flocking estimates. Then, we show that as the number of individuals N tends to infinity, the N -particle system can be well approximated by a delayed Vlasov alignment equation. Moreover, we establish the global existence of measure-valued solutions for the delayed Vlasov alignment equation and analyze its large-time asymptotic behavior.