

## **Fractional parabolic models arising in flocking dynamics and fluids.**

Roman Shvydkoy, UIC

We discuss global well-posedness and long time behavior of problems arising in Cucker-Smale agent-based dynamics. Particularly we will discuss cases when interaction kernel is a power function of the distance. The key feature of these models is a nonlocal nonlinear dissipation which presents a challenge for applicability of recently developed methods. We show that in periodic settings the solutions are globally regular, flock to a fixed limiting traveling state, and align exponentially fast to a constant mean velocity.