

# A hydrodynamic model of flocking type: BV solutions and long-time behavior

Debora AMADORI <sup>\*</sup>, Cleopatra CHRISTOFOROU <sup>†</sup>

Mathematical models of self-organized systems, that can capture the emergent behavior, have received a lot of attention in recent years.

In this talk, we will discuss a hydrodynamic model of flocking type with an all-to-all interaction kernel, related to the work of [2]. First, we establish the global existence of entropy weak solutions for arbitrary initial data of bounded variation with finite mass confined in a bounded interval and uniformly positive density therein. Then we show, with a careful analysis of wave interaction and cancellation, that the entropy solution admits time asymptotic flocking.

## References

- [1] D. Amadori, C. Christoforou. BV solutions for a hydrodynamic model of flocking-type with all-to-all interaction kernel, *Preprint*
- [2] T. Karper, A. Mellet, K. Trivisa. Hydrodynamic limit of the kinetic Cucker-Smale model, *Math. Models Methods Appl. Sci.* **25** (2015), no. 1, 131–163

---

<sup>\*</sup>DISIM, University of L'Aquila (Italy). Email: debora.amadori@univaq.it

<sup>†</sup>Department of Mathematics and Statistics, University of Cyprus. Email: christoforou.cleopatra@ucy.ac.cy