

Exponential convergence towards consensus for non-symmetric linear first-order systems in finite and infinite dimensions

mardi 17 octobre 2023 14:00 (1 heure)

I will first recall some results on how to achieve consensus for well known classes of systems, like the celebrated Cucker-Smale or Hegselmann-Krause models. When the systems are symmetric, convergence to consensus is classically established by proving, for instance, that the usual variance is an exponentially decreasing Lyapunov function: this is a “ L^2 theory”. When the systems are not symmetric, no L^2 theory existed until now and convergence was proved by means of a “ L^∞ theory”.

In this talk I will show how to develop a L^2 theory by designing an adequately weighted variance, and how to obtain the sharp rate of exponential convergence to consensus for general finite and infinite-dimensional linear first-order consensus systems.

If time allows, I will show applications in which one is interested in controlling vote behaviors in an opinion model. This is a work in collaboration with Laurent Boudin and Francesco Salvarani.

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