

Contributed Talk

- Elliptic Mean Field Games Systems -

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Abstract

In this talk we discuss the existence of classical solutions for elliptic mean-field games. These arise in ergodic (mean-field) optimal control, convex degenerate problems in calculus of variations, and in the study of long-time behavior of time-dependent mean-field games. Our argument is based on the interplay between the regularity of solutions of the Hamilton-Jacobi equation in terms of the solutions of the Fokker-Planck equation and vice-versa. Because we consider different classes of couplings, distinct techniques are used to obtain a priori estimates for the density. In the case of polynomial couplings, we recur to an iterative method. An integral method builds upon the properties of the logarithmic function in the setting of logarithmic nonlinearities. This is based on a joint work with V. Voskanyan (KAUST).