Second order Mean field games on networks

Abstract

We consider stationary and non-stationary mean field game systems constrained on a network following the previous work of Camilli and Marchi (2016). At the cross point, there are some special conditions such as Kirchhoff conditions for the value function and conservation flux and "jump" conditions for the density of states. We prove the well-posedness for each of the two equations composing the system in the class of Sobolev solutions and then establish the regularity. The last step is to prove existence and uniqueness for the mean field games system.