

# First-order, stationary mean-field games with congestion

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Mean-field games (MFGs) are models for large populations of competing rational agents that seek to optimize a suitable functional. In the case of congestion, this functional takes into account the difficulty of moving in high-density areas.

In this talk, we address stationary MFGs with congestion with quadratic or power-like Hamiltonians. Using explicit examples, we first show that classical solutions may fail to exist and that there are areas with vanishing density. Then, we present a new variational formulation for MFGs with congestion that allows us to overcome these difficulties; in particular, we prove the existence and uniqueness of solutions. To conclude, we present some numerical applications.