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DISCRETE MEAN-FIELD GAMES: EXISTENCE AND CONVERGENCE

We consider mean-field games with discrete state space. We provide the minimal assumptions under which the existence of a mean-field equilibrium of the class of models under consideration can be guaranteed. Moreover, we study the convergence of the equilibria of N-player games to mean-field equilibria. We define a class of strategies over which any equilibrium converges to a mean-field equilibrium when the number of players goes to infinity and we exhibit equilibria outside this class that do not converge to mean-field equilibria. Finally, we present an example of a discrete mean-field game and we fully characterize its mean-field equilibrium.