Mean Field Games with incomplete information

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We consider a mean-field game model where the payoff depends on a fixed parameter, that is unknown to players. Players receive a stream of private signals on this parameter along the game. We derive a mean field system satisfied by the equilibrium payoff of the game with fixed duration. Under some monotonicity assumption, we prove the uniqueness of the solution. As an example, we consider a product differentiation model, in which players are firms that sell the same product and the unknown parameter represents the preferences of the consumer on the features of the product.

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