

# An approximate Nash equilibrium for pure Jump Markov games of mean-field type on continuous state space.

Rani Basna

Linnéuniversitetet,

`rani.basna@lnu.se`

## Abstract

The abstract: We investigate mean-field games from the point of view of a large number of indistinguishable players which eventually converges to infinity. The players are weakly coupled via their empirical measure. The dynamics of the states of the individual players is governed by a non-autonomous pure jump type semigroup in a Euclidean space, which is not necessarily smoothing. Investigations are conducted in the framework of non-linear Markov processes. We show that the individual optimal strategy results from a consistent coupling of an optimal control problem with a forward non-autonomous dynamics. In the limit as the number  $N$  of players goes to infinity this leads to a jump-type analog of the well-known non-linear McKean-Vlasov dynamics. The case where one player has an individual preference different from the ones of the remaining players is also covered. The two results combined reveal an epsilon-Nash Equilibrium for the  $N$ -player games.