1127-49-99 **Alpár R. Mészáros*** (alpar@math.ucla.edu). *Mean Field Games with density constraints.*

The theory of Mean Field Games (MFG) was initiated by J.-M. Lasry and P.-L. Lions roughly 10 years ago. In its simplest form an MFG system can be written in terms of a coupled system of a Hamilton-Jacobi and a continuity equation. The first equation describes the evolution of the value function of a typical agent, while the second one characterizes the evolution of the agents' density.

We study a variational MFG model, where we impose a density constraint. From the modeling point of view, imposing this new constraint means that we are aiming to avoid congestion among the agents. A weak solution of the system contains an extra term, an additional price imposed on the saturated zones.

Our model shares some common features with the variational models of incompressible Euler equations à la Brenier. In particular, the additional price appearing in the saturated zones corresponds to the pressure field from these models. The techniques to study the regularity ($L^2_{loc,t}BV_x$) of the pressure field (developed by Y. Brenier and later by L. Ambrosio and A. Figalli) can be used in our context as well to obtain the same regularity for the additional price. The talk will be based on a joint work with P. Cardaliaguet (Paris Dauphine) and F. Santambrogio (Paris-Sud, Orsay). (Received January 26, 2017)