

CONSERVATION LAWS IN VEHICULAR TRAFFIC, POPULATION BIOLOGY AND CONSENSUS GAMES

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ABSTRACT. Conservation (or balance) laws are known to provide the analytic environment to several models describing collective behaviors. Examples comprise models for vehicular traffic, crowd dynamics or population dynamics. In many cases, an external controller aims at steering the system towards some sort of optimal evolution. In other situations, each single individual strives for her/his individual success. Typically, the former case corresponds to a *control* problem, while in the latter one we are given a *game*.

Examples falling in the first category are the optimal management of a renewable resource or the search for the optimal strategy to drive a herd within a target region. Within the latter category we find consensus games as well as the exploitation of a road network by many “*competing*” commuters.

The present talk describes the modeling environments, the resulting analytic frameworks and results. Qualitative features resulting from the various assumptions are described with the aid of numerical integrations.

Keywords: Hyperbolic Consensus Problems; Management of Biological Resources; Traffic dynamics; Conservation Laws.

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