

27th IFIP TC7 Conference 2015 on System Modelling and Optimization

Optimal control and Hamilton-Jacobi-Bellman equations: Numerical methods and Applications

**A junction condition by precised homogenization of a discrete model with a local perturbation and application to traffic flow**

**Nicolas Forcadel**

Laboratoire de Mathmatique de l'INSA, INSA de Rouen

nicolas.forcadel@insa-rouen.fr

**Abstract:** The goal of this talk is to show how it is possible to deduce macroscopic model of traffic flow from microscopic model containing a local perturbation. At the microscopic scale, we consider a first order model of the type follow the leader , i.e., the velocity of a vehicle depends only on the distance with the one in front of it.

We consider a local perturbation located at the origin which make slow down the cars. At the macroscopic scale, we attend to recover an Hamilton-Jacobi equation on the right and on the left of the origin and a condition of junction at the origin (as studied in the work of Imbert and Monneau). This junction condition allows us to see the influence of the microscopic perturbation at the macroscopic scale.

This is a joint work with W. Salazar.