

Control and Optimization for Traffic Flow

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In the last years, starting with the seminal papers by Lighthill and Whitham [3] and Richards [4], there was an increasing interest in conservation laws for the modeling of traffic flow in road networks, mainly justified by applications. In particular, the problems of reducing congestions, car accidents, and pollution have been tackled with various approaches.

In the talk we present a possible way for controlling traffic flow when described by the first order macroscopic Lighthill-Whitham-Richards (briefly LWR) model. More precisely, we consider a control function acting at the level of junctions [1]. We discuss about the concept of solution and we show that, for every choice of the control function, the solution exists and that, in some cases, the input-output map is continuous. We also consider the problem of minimizing functionals describing traffic performance indexes, already proposed in the literature, and we show the existence of optimal solutions [2].

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References

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