A MULTI-POPULATION TRAFFIC FLOW MODEL ON NETWORKS ACCOUNTING FOR ON-LINE NAVIGATION DEVICES

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Abstract. We present a macroscopic multi-population traffic flow model on networks accounting for the presence of agents using navigation devices to minimize their instantaneous travel time to destination. The strategic choices of each population differ for the degree of information about the system: while part of the drivers knows only the structure of the network and minimizes the traveled distance, others are informed of the current traffic distribution, and can minimize their travel time avoiding the most congested areas. In particular, the route choices are computed solving Eikonal equations on the road network and they act at road junctions level. The impact on traffic flow efficiency is illustrated by numerical experiments.

Keywords: Macroscopic multi-population models on networks; Eikonal equation on networks; Routing strategies; Wardrop equilibrium

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