
Theoretical criteria for correctness of traffic models

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Abstract

We will present some interesting mathematical and statistical predictions on certain universal properties of general agent-systems with an accent to the microstructure of vehicular flows. We will show that some of the statistical distributions, which are usually applied for fitting the time- or distance- headway histograms, are (for such a purpose) mathematically (and statistically) inadmissible. Simultaneously, we will formulate basic rules for permissibility of analytical headway-distributions, as well as rules for an appraisal of traffic models. All the theoretical criteria will be confronted to the advanced statistical analysis of free-way data and discussed within the context of the traffic theory. Marginally, the connection between traffic microstructure and Random Matrix Theory will be commented.

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