



Theory of cycle traffic flow - fundamental diagram

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Abstract

The macroscopic fundamental diagram describes the relationship between the parameters of traffic flow, traffic density and average speed. The first versions of this model date back to the beginning of the 20th century. Today, there are many more advanced and complex variants that deal with a wide variety of problems. The MFD is used in particular for traffic flow control in transportation networks. The bicycle is becoming increasingly important as a mode of transport. This development is only partially reflected in macroscopic traffic modeling in the form of the MFD. As part of this bachelor thesis, the existing literature was examined for knowledge gaps. The following problems were identified: (1) Lack of further development of bicycle traffic MFD (RMFD) due to insufficient research (2) Lack of data collection possibilities that can be used on a large scale (3) Few areas of application for the results of RMFD, apart from the influence on car traffic. Suggested potential solutions for closing these gaps include: (1) further shifting RMFD research to the microscopic scale in favour of research, (2) developing apps for cyclists and collaborating with bicycle rental systems for data collection, and (3) using MFD to benefit bicycle traffic flow instead of optimizing car traffic at traffic lights or as a justification for bicycle lane construction.