Lehrstuhl für Verkehrstechnik (Prof. Bogenberger)

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Titel des Beitrags: Impacts of Automated Vehicles on Operational and Safety Performance of Freeway Traffic Flow
Abstract:
The interest in automated vehicles (AVs) and their potential impact on the safety and efficiency of traffic is increasing more and more every day. Accident analyses have shown, that most of the current accidents are related to human misbehavior. AVs are promised to be able to avoid some of the driver’s failures like driver inattention and to harmonize the traffic flow. However, investigating implications of higher levels of automation has been somewhat constrained by the fact that the development and implementation of this technology is still an ongoing process. On the other hand, these vehicles are not yet widespread present in current car traffic flow. Therefore, the safety measures such as accidents and fatality frequencies cannot be obtained. Hence, this study seeks to investigate the potential effects of AVs on freeways in terms of operational and safety performance using microscopic traffic simulation. It is largely argued that these vehicles cannot have a driving behavior which is considerably different from human driving behavior as long as they are operating in mixed traffic. Therefore, the simulated AVs in this study follow the current recommendations of the German Road Traffic Act (StVO) and they...
can only have a more aggressive driving behavior when having another AV as predecessor. Moreover, this study investigates the potential effects of different penetration rates of AVs on safety using various surrogate safety indicators such as time to collision (TTC), time integrated time to collision (TIT), time exposed to collision (TET), and modified deceleration rate to avoid collision (MDRAC).

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