



## Interaction between lane changing and car-following

### Problem description

Lane changes are disruptive in the traffic flow on motorways. Therefore, the understanding of lane changes is key to the understanding of traffic stability, and the formation of queues.

### Assignment

The goal of this study is to understand to which extent the decision to lane changing depends on the speed and the other way around. The scope of this study is quantitative, i.e. on the road (or in a driving simulator) drivers are being observed and their car-following behavior as well as their lane changes are being analysed and described in mathematical terms. Hypothesis in this study is that car-following is based on an action-point model (i.e., accelerations do not change continuously in time), and the moments the accelerations change is related to lane changes

### Required skills and interests:

- Interests: traffic flow theory
- Work with the latest observation techniques for in-car (video analysis, radar)
- Good programming skills
- Good analytic skills
- Organisation skills (for the experiments)

Skills furthermore depend on the chosen approach: it can be more towards interviews, in which case organisation and human interaction play an important role. If the student chooses a more modelling perspective (implementation of the strategies), programming and interpretation of traffic comes into play.

### Supervision

Supervisor: Prof.dr.ir. Serge Hoogendoorn (Transport & Planning)

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