

# **Doubling of vehicles**

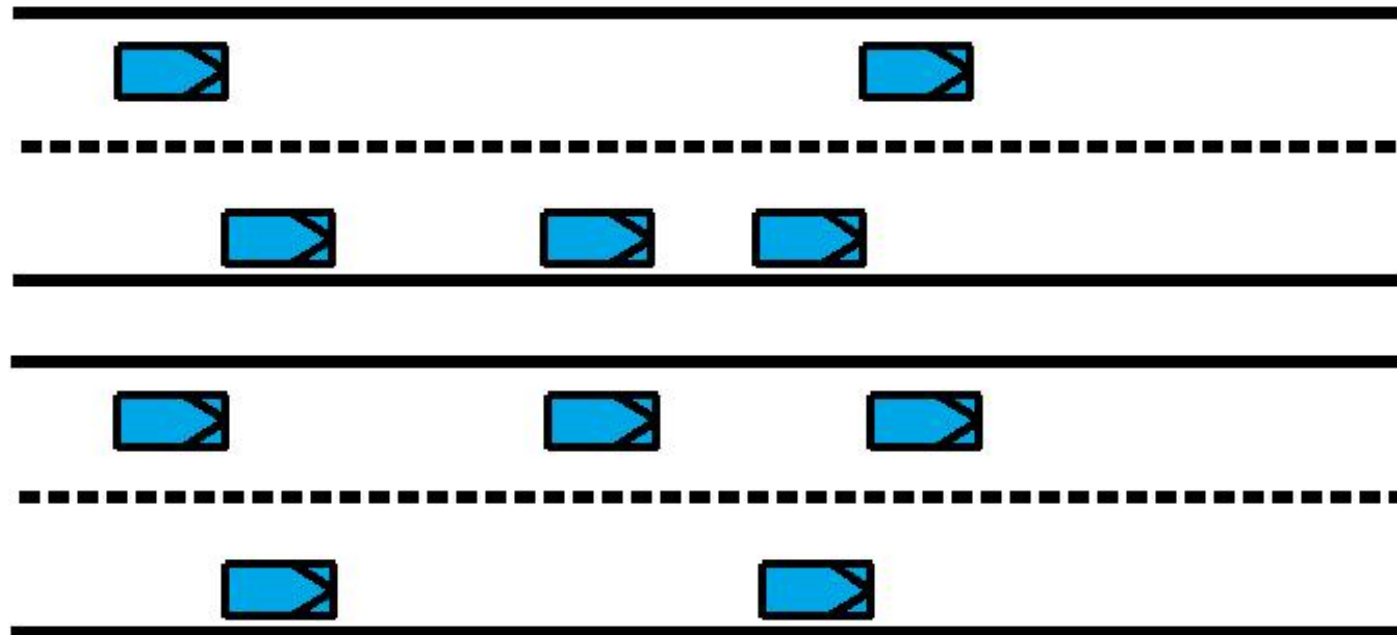
## Describing the process of lane changing

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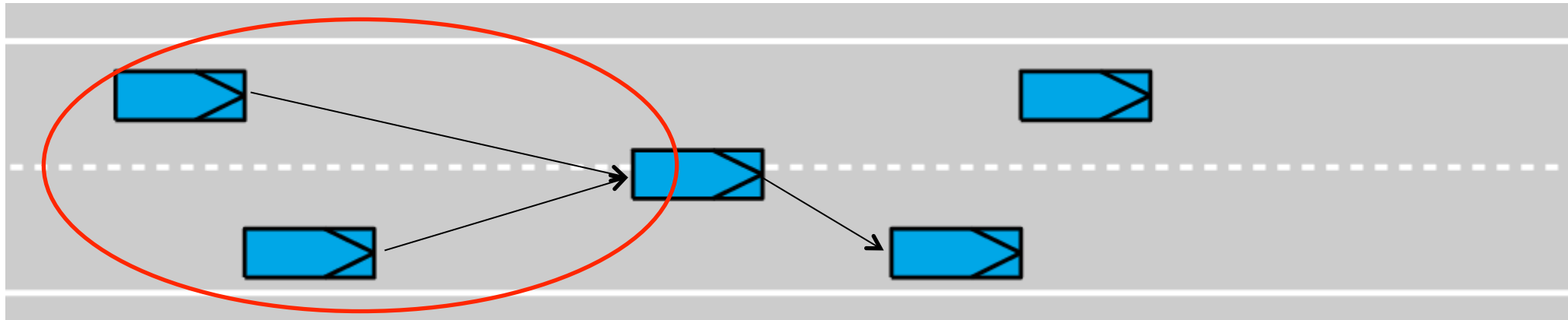
# Contribution

- Lane changes has a non-zero duration
- This can be measured from the trajectories of surrounding vehicles

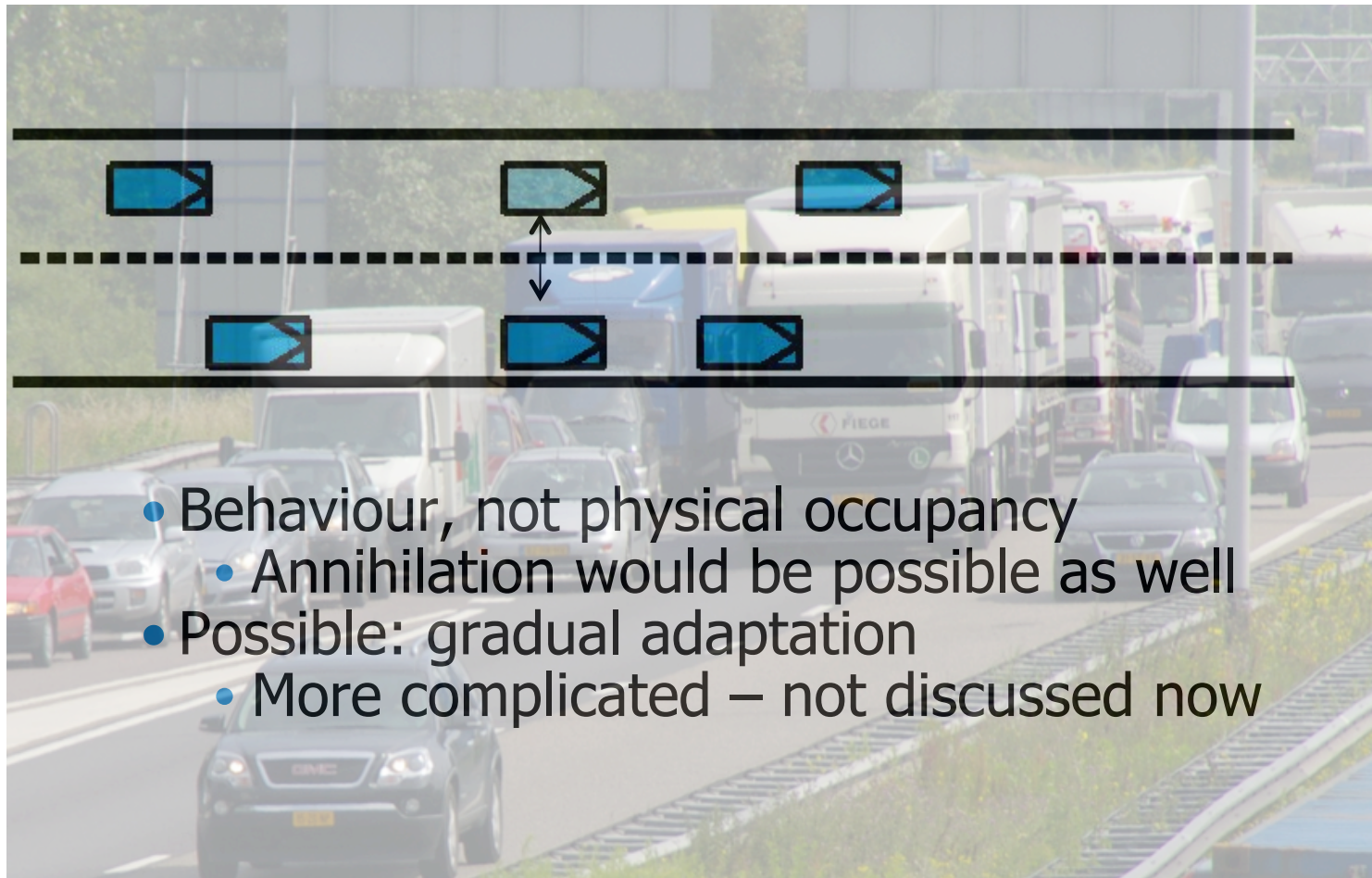
# Current description of lane changes



# Actual Situation and Influences

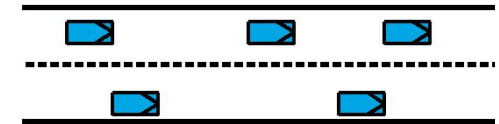


# Human behaviour & Modelling



# Effect quantification

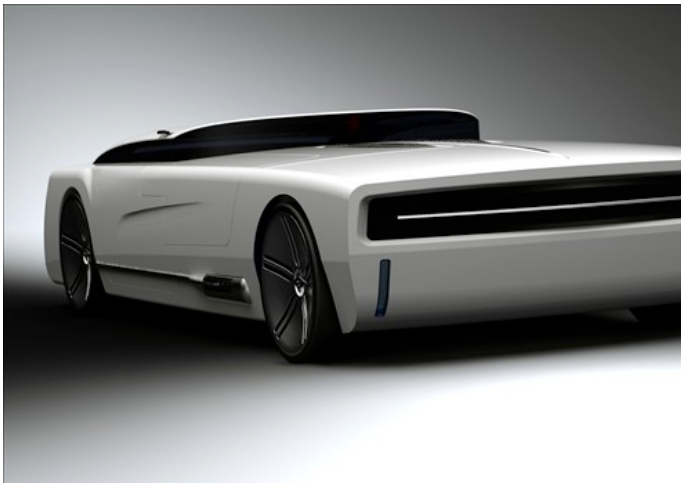
- Measure reactions of new follower
  - When does relaxation start?
- Measure reaction of old follower
  - When does the gap start to close
- Difference between these: time of ghost vehicle



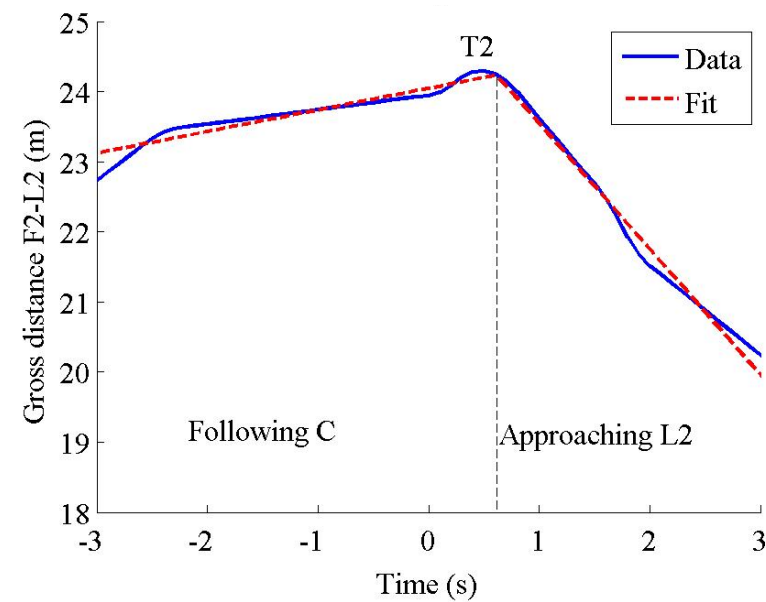
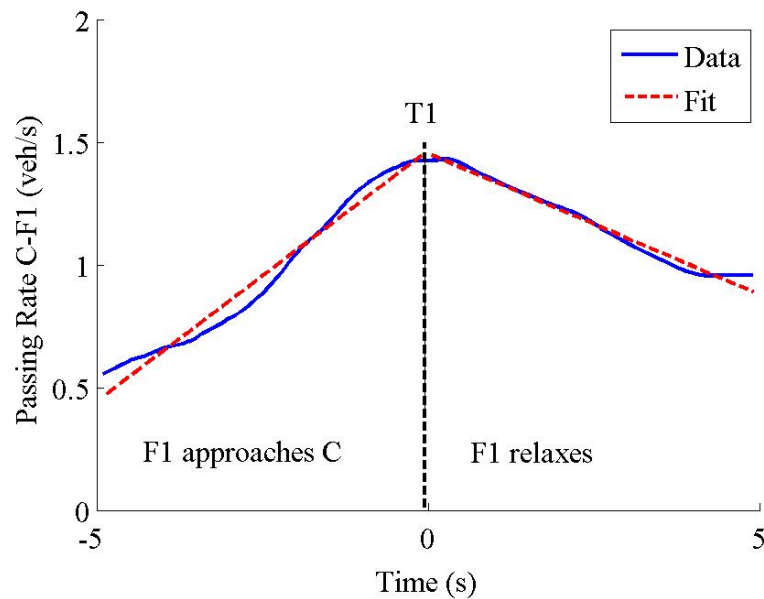
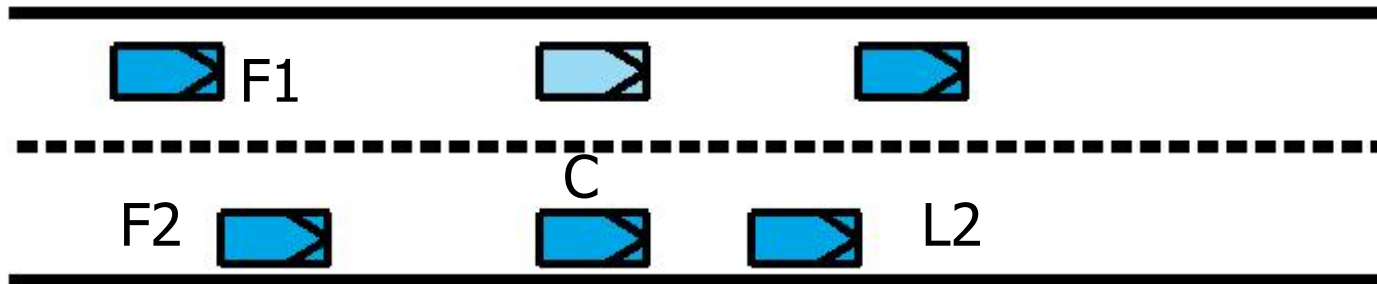


# Data NGSIM

- Congested roads
- But: US
  - Other cars
  - Other driving behaviour



# Preliminary result





# Future development

- Lane changing has a duration
- The duration of a lane change can reduce capacity
  - ITS measures for fast response?
- Model this in a microscopic simulator
- Pre-lane-change anticipation on target lane?

# Proposition

- Even all traffic data will not show us the human driving behaviour...
- but there are models giving a perfect description

# Acknowledgement

- Netherlands organisation for scientific research:  
"How Traffic Jams Start"
- High Tech Automotive Systems:  
SPITS / CCC