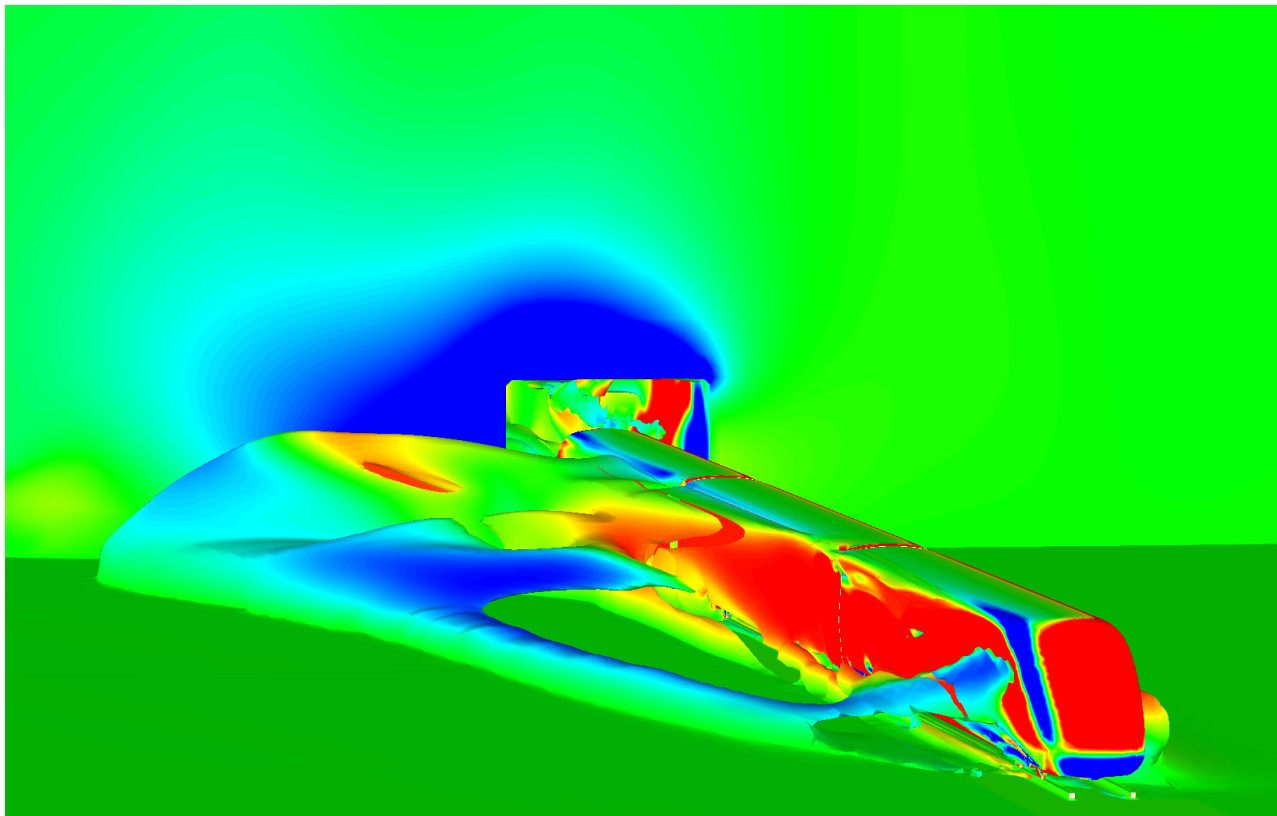




# CHALMERS



## Active Steering Dolly for Long Combination Vehicles

Design of a Real-Time Control Interface for a steerable Dolly  
Master's thesis in Automotive Engineering

SEBASTIAN FRANZ  
MICHAEL HOFMANN

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Department of Applied Mechanics  
CHALMERS UNIVERSITY OF TECHNOLOGY  
Göteborg, Sweden 2015



MASTER'S THESIS IN AUTOMOTIVE ENGINEERING

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## ABSTRACT

Keywords: Some stuff, More stuff, Stuff



## PREFACE

## ACKNOWLEDGEMENTS





## NOMENCLATURE

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# **1 Introduction**

## **1.1 Purpose**

Heavy goods-transport on the road has constantly increased over the last decades. Coupled with the stricter environmental regulations concerning CO<sub>2</sub>-emissions and pollution and the call for more economical transport have led to the introduction of long

## **1.2 Limitations**

## **1.3 Structure of this work**

## **2 Overview**

### **2.1 Ongoing research**

### **2.2 Legal Situation**

### **2.3 Market overview for existing solutions**

## **3 Hardware Setup**

### **3.1 Utilized dolly system**

### **3.2 Real-Time Environment**

### **3.3 Interfaces with Dolly**

### **3.4 Measurment Setup**

## 4 Processing Time evaluation

### 4.1 Background

### 4.2 Measured input delay

### 4.3 Computational delay



## 5 Steering Model

### 5.1 Overview of the model

### 5.2 Input parameters

### 5.3 Real-Time implementation

### 5.4 Interface with Real-Time environment

## **6 Testing**

### **6.1 Overview**

### **6.2 Bench-Testing**

#### **6.2.1 ECU-setup**

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### **6.5 Interface with Real-Time environment**

## 7 Discussion

### 7.1 Results from bench testing

### 7.2 Results from in vehicle testing

### 7.3 Results from on-track testing

### 7.4 Comparrison

## 8 Conclusion

### 8.1 Recommendation

### 8.2 Future Work

genital[Pom+08]

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