Optimisation of the double wishbone suspension regarding kinematics and aerodynamics

We are looking for motivated master students Engineering Technology

Project description:

Formula Electric Belgium (**FEB**) is a team of highly motivated engineering students that build an electric formula student race car. Just like Formula 1 the team builds a brand-new car each year to compete in multiple international competitions during the race season. Formula Student is the largest international engineering and design competition in the world. The competition is characterized by combustion vehicles, electric vehicles and since recently also autonomous vehicles. Formula Electric Belgium strives towards innovations and the raw performance of technologies. It is for this reason that the team will focus on the autonomous/electric race cars. Research and development applications will be made by postgraduate students in collaboration with thesis students from the KU Leuven and bachelor students from Thomas More.

Thesis description:

This thesis is about the optimisation of the double wishbone suspension for a formula student car. In the past years, we mainly focussed on the kinematics of the suspension. With this thesis we hope to get more insight into the effect of the suspension on the aerodynamics of the vehicle. This thesis needs to find a compromise between optimal kinematics and aerodynamic effects of the double wishbone suspension. This compromise needs to be justified with a lap time simulation to know the importance of the two effects and to find the most optimal solution. Also, a study should be performed to change the production of the A-arms to ensure a lower drag coefficient.

Thesis objective:

A study of the importance of the suspension on the aerodynamics of the vehicle. The most optimal hardpoints should be calculated regarding the dynamics and the drag coefficient of the vehicle. Next to this, a new design for the A-arms should be considered to reduce their drag coefficient. The vehicle dynamic simulations will be performed using IPG-CarMaker (lap time simulation) and ADAMS (kinematics). The aerodynamic simulations will be performed using STAR-CCM+.

Profile:

- Interested in vehicle dynamics
- Interested in aerodynamics
- Able to work methodically
- Creative
- Teamplayer

What do you gain?

- A unique engineering– and team experience where hard work and team atmosphere are central.
- Work with innovative technologies in a realistic environment/application.
- Create added value for your curriculum and the team

Are you interested? Please send your resume with accompanying motivation to:
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