Multi Objective Aerodynamic Design in Formula SAE

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Abstract

This thesis examines the effect of aerodynamics on Formula SAE vehicles. Due to the different objectives of the Formula SAE events, an understanding of the vehicle’s complete aerodynamic design is necessary. Using a half car computation fluid dynamics (CFD) model, a series of sensitivity studies are conducted to determine trends and interactions between each aerodynamic component and the full vehicle. Recommendations to the vehicle’s aerodynamic design are made based on observations in sensitivity studies.

The 2013 Global Formula Racing (GFR) combustion vehicle was then used to physically evaluate four different aerodynamic configurations and their effect to on track vehicle performance and competition score.

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