Colorado Science and Engineering Fair

2024 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Aerodynamics and Downforce: The Leading Edge in Formula One Racing

Finalist's Name: Junyao Yin

School and City: Summit Middle Charter School, Boulder

Sponsor's Name: Peter Teasdale

Category: Engineering (ENGR)

Division: Junior (6th - 8th grades)

Abstract (250 words or less):

Making the best-performing racecar requires engineers to consider two main factors: aerodynamics and downforce. Poor aerodynamics increases drag and slows cars down, therefore low coefficients are desirable. Downforce pushes the car down onto the track, grounding it and stabilizing it while turning at high speeds. Negative downforce coefficients are ideal, whereas positive coefficients lift the car. Speed tests were run on a 2016 version of a Formula One car's rear wing, which is the main downforce generator for the entire vehicle. The t-test results implied that the local minima and maxima for the different speeds changed alongside each other, stating that the speeds had not changed the lift and drag coefficients as predicted.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature: [signature] Date: 2/27/2024

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES o all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. A signed copy of this form must be included in your notebook.