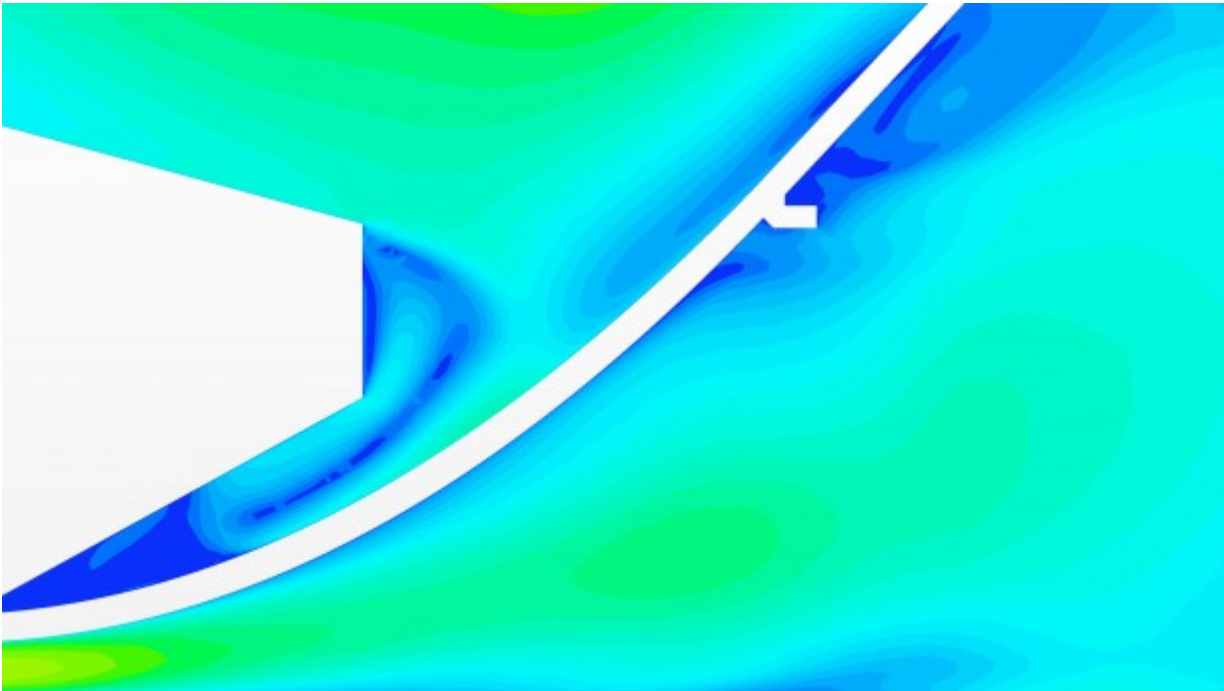




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Validity of Commercial CFD Codes in Low-Budget Race Car Development



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Abstract:

Computational Fluid Dynamics codes have been used in motorsports for decades, but have only recently become available to private and Formula Student teams. The use of 'out of the box' codes by non-specialist personnel in the development of aerodynamic packages can produce poor results and lead to low quality designs. By comparing numerical results obtained using different basic settings with experimental tests of the same set-up, this project aims to determine whether commercial CFD packages can be used as a tool for race car aerodynamic design in a low-budget environment by relatively inexperienced engineers or students. The results show a good agreement between the experimental measurements and the calculations performed with the finer grids in all the studies, with the coarser meshes only producing good results when estimating the pressure distribution around the sidepod aerofoil sections. Among the turbulence models used, the SST formulation provided the most accurate representation of the flow field. It is therefore determined that CFD packages can be a powerful tool for race car development, so long as large enough meshes are used and a careful selection of the basic settings is performed.

 [Ginete_Moore.pdf](#)^[1]

Author Name:

J. Ginete
J. Moore
G. Tartaglione

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