

## Partially-Averaged Navier-Stokes for Computations of Flow Around Three-Dimensional Ahmed Bodies

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**Abstract :** The paper reports a study about the prediction of flows around simplified vehicles using Partially-Averaged Navier-Stokes (PANS). Numerical simulations are performed for two simplified vehicles: A slanted-back Ahmed body at  $Re=30\ 000$  and a square back Ahmed body at  $Re=300\ 000$ . A comparison of the resolved and modeled physical flow scales is made with corresponding LES and experimental data for a better understanding of the performance of the PANS model. The PANS model is compared for coarse and fine grid resolutions and it is indicated that even a coarse-grid PANS simulation is able to produce fairly close flow predictions to those from a well-resolved LES simulation. The results indicate the possibility of improvement of the predictions by employing a finer grid resolution.

**Keywords :** partially-averaged Navier-Stokes, large eddy simulation, PANS, LES, Ahmed body

**Conference Title :** ICFMT 2015 : International Conference on Fluid Mechanics and Thermodynamics

**Conference Location :** New York, United States

**Conference Dates :** June 04-05, 2015