PraVaHa Software

Recently, the Indian Space Research Organisation (ISRO) has developed Computational Fluid Dynamics (CFD) software named **Parallel RANS Solver for Aerospace Vehicle Aero-thermo-dynamic Analysis (PraVaHa).**

- PraVaHa is a software tool specifically designed to analyse the **aerodynamics and thermodynamics** of aerospace vehicles like launch vehicles and winged and non-winged re-entry vehicles.
- It **simulates how air flows** around aerospace vehicles and **calculates the resulting forces** and heat effects which is essential to design the shape, structure, and Thermal Protection System (TPS) required for these bodies.
- It has been extensively used in the Gaganyaan program for aerodynamic analysis of human-rated launch vehicles, such as HLVM3, Crew Escape System (CES), and Crew Module (CM).
- Any aerospace vehicle while moving through the Earth's atmosphere during **launch or re-entry** is subjected to severe aerodynamic and aerothermal loads in terms of **external pressure and heat flux.**
    - **Computational Fluid Dynamics (CFD)** is one such tool to **predict the aerodynamic and aerothermal loads** which solve numerically the equations of conservation of mass, momentum, and energy along with the equation of state.

Read more...

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