

# TECHNOLOGIES TRANSFERRED FROM ISRO

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## PARAS 3D SOFTWARE

(PARAllel Aerodynamic Simulator)

PARAS 3D is a general purpose flow analysis and simulation software developed by ISRO. It has been successfully applied to large scale simulation problems like the flow over a complete multi body launch vehicle configuration with strap on boosters, the flow over a complete aircraft with wing, fuselage, stores etc. The parallel computer platform uses LINUX as the operating system and the Message Passing Interface (MPI) for communication among different processors. The code has been thoroughly validated by applying to a number of flow simulation problems where the results are known from either wind tunnel experiments or from other numerical simulations using established codes. It has been successfully applied to a number of complex practical problems in the launch vehicle / aircraft design. Typical examples are flow simulation during Hot Stage Separation of a Launch vehicle, High Area Ratio Contoured Nozzle, Multijet Flow Simulation over the Launch Pad deflector and pedestal, flow through air intakes at different Mach Numbers, flow through vented interstage structures, flow over multi body launch vehicle configurations etc.

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