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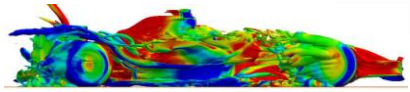

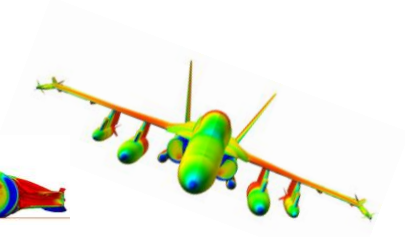

AERO-F: Complex Flow Solver
Capabilities Chart
Release 2.0

Computational Frameworks	**Mesh Types**
Eulerian	Fixed Body-Fitted
Arbitrary Lagrangian Eulerian (ALE)	Moving Body-Fitted
Chimera	Fixed or Moving Overset Body-Fitted
Eulerian with Embedded Boundary Method	Fixed Non-Body-Fitted
Eulerian-ALE with Embedded Boundary Method and Mesh Motion	Moving Non-Body-Fitted
Moving and Deforming Meshes	
Structural Analogies (One Level, Two Level, and Corotational)	
Analysis Types	
Steady-State	
Unsteady	
Accelerated and Decelerated Flows	
Rigid (6DOF) Trimming with/without Control Surfaces	
Rigid (6DOF) Maneuvering	
Rigid (6DOF) Landing and Taxiing with/without Runway Bumps	
Explicit	
Implicit	
Sensitivity	
Steady-State	
Aeroacoustics	
Acoustic Analogies [Kirchhoff, Morfey-Wright, and Ffowcs Williams-Hawkings]	
Density Formulation for Acoustic Analogies	
Pressure Formulation for Acoustic Analogies	
Discrete Kirchhoff Surfaces	
Power Spectral Density	
Multiphase Flows	
Two-Phase Flows	
Level Set	
Programmed Burn	
Linearized	
Unsteady	
Forced Body Motion	
Forced Temperature Oscillation	
Linearized Multi-Physics	
Fluid-Structure (Aeroelastic)	
Fluid-Thermal (Conjugate Heat Transfer, Aerothermal)	
Fluid-Thermal-Structure (Conjugate Heat Transfer, Aerothermoelastic)	
Multi-Physics	
Flexible (Aeroelastic) Trimming via Coupling with **AERO-S**	
Flexible (Aeroelastic) Maneuvering via Coupling with **AERO-S**	
Fluid-Structure (Aeroelastic) via Coupling with **AERO-S**	
Fluid-Structure-Control (Aeroservoelastic) via Coupling with **AERO-S**	
Fluid-Thermal (Conjugate Heat Transfer, Aerothermal) via Coupling with **AERO-S**	
Fluid-Thermal-Structure (Conjugate Heat Transfer, Aerothermoelastic) via Coupling with **AERO-S**	

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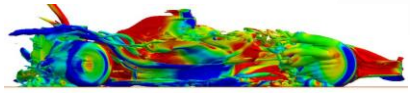

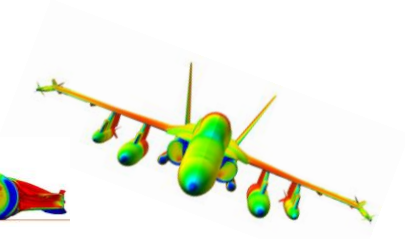

Equations of State
Perfect Gas
Stiffened Gas
Equilibrium Air
Tait (Barotropic)
Tillotson
Jones-Wilkins-Lee (JWL)
Turbulence Models
Reynolds-Averaged Navier-Stokes (RANS) [Spalart-Allmaras, k-e, k-w]
Unsteady Reynolds-Averaged Navier-Stokes (URANS) [Spalart-Allmaras, k-e, k-w]
Detached Eddy Simulation (DES)
Large Eddy Simulation (LES) [Smagorinski, Dynamic Smagorinski, VMS, Dynamic VMS, WALE]
Wall Function
Boundary Conditions
Gust
Wall, Porous Wall, Inlet, Outlet, Far-Field, Direct State, Mass Flow, Actuator Disk
Time-Dependent
Orders of Accuracy
1^{st} to 6^{th} in Space
1^{st} to 4^{th} in Time
Equation Solvers
Newton-Krylov
Homotopy
Scalable Domain-Decomposition-Based Iterative
Features
Sliding Surfaces
Control Surfaces Deflection and Piloting
Body Force Models
Low Mach Preconditioner
Porous Media
Sensors and Probes
Customizable User Functions
Projection-Based Model Order Reduction
Linearized
Parallel Processing
Shared Memory
Distributed Memory
Hybrid
Threads
OpenMP
MPI
MPI-OpenMP