



## AERO-S: Structural/Thermal Analysis Capabilities Chart Release 2.0

### Analysis Types

Static  
Eigen  
Frequency Response  
Frequency Sweep  
Modal Dynamic  
Explicit Transient Dynamic  
Implicit Transient Dynamic

### Multi-Physics

Sloshing  
Hydroelastic  
Flexible (Aeroelastic) Trimming via Coupling with **AERO-F**  
Flexible (Aeroelastic) Maneuvering via Coupling with **AERO-F**  
Fluid-Structure (Aeroelastic) via Coupling with **AERO-F**  
Fluid-Structure-Control (Aeroservoelastic) via Coupling with **AERO-F**  
Fluid-Thermal (Conjugate Heat Transfer, Aerothermal) via Coupling with **AERO-F**  
Fluid-Thermal-Structure (Conjugate Heat Transfer, Aerothermoelastic) via Coupling with **AERO-F** and Itself  
Thermal-Structure (Thermoelastic) via Coupling with Itself

### Material Laws

Infinitesimal and Finite Strain Linear Elasticity, Nonlinear Elasticity, Hyperelasticity, and Hypoelasticity  
Infinitesimal and Finite Strain Plasticity  
Infinitesimal and Finite Strain Elasto-Plasticity  
Infinitesimal and Finite Strain Visco-Elasticity

### Elements

Extensive Library of Spring, Joint, Bar, Beam, Free-Play, Plate, Shell, Solid, Rigid and Flexible Elements  
Composites Elements  
Higher-Order Elements

### Nonlinearities

Geometric  
Buckling  
Contact  
Material Failure  
Crack Propagation  
Stefan-Blotzmann

### Equation Solvers

Direct  
Iterative  
Scalable Domain-Decomposition-Based Iterative

### Features

Sensors and Actuators  
Control Surfaces Deflection and Piloting  
Customizable User Functions (including Control Laws)

### Projection-Based Model Order Reduction

Linear  
Nonlinear

### Parallel Processing

Shared Memory  
Distributed Memory  
Hybrid  
Threads  
OpenMP  
MPI  
MPI-OpenMP