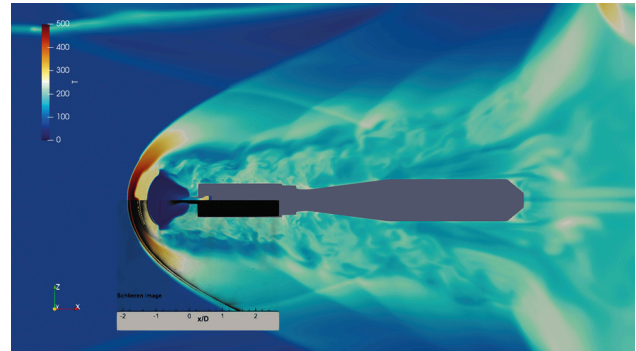


DrNUM is an acronym for dual resolution numerics and it is a high performance CFD code well suited for compressible aerodynamics.

Unlike other CFD codes, DrNUM has from the start been designed with massively parallel hardware (e.g. GPUs) in mind. Right now the software can run up to approximately 10 million cells per 1GB device RAM. Practical simulation sizes are in the order of 50–200 million cells per GPU.

The software is a joint development between numrax GmbH and enGits GmbH.



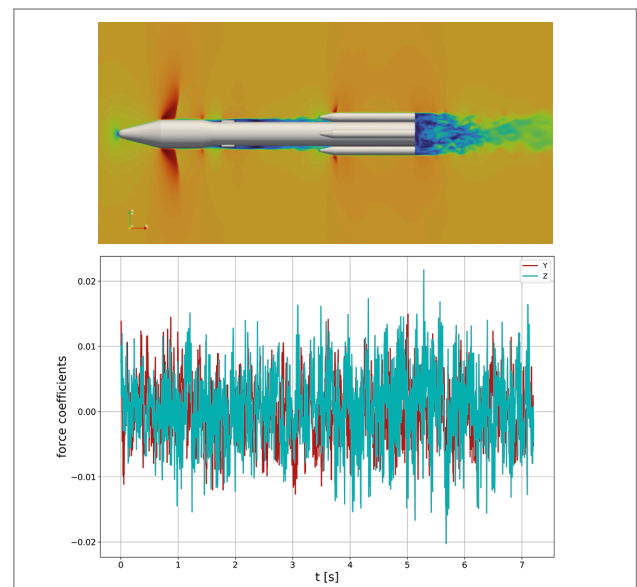
Supersonic retro-propulsion

### Key Features

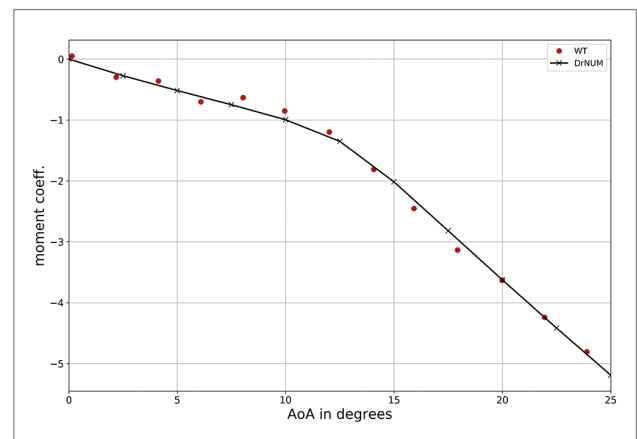
- Very fast
- Straight-forward pre-processing
- No manual mesh interaction required for standard aerodynamic analysis
- Large scale transient simulations of a single PC (e.g. LES for supersonic retro-propulsion)
- Large scale simulations on standard hardware (200 million cells on a single workstation)

### Applications

- Global aerodynamic coefficients
- Distributed coefficients
- Retro propulsion
- Acoustic loads during liftoff
- Blast wave on the launch pad
- Other specific aerodynamic problems



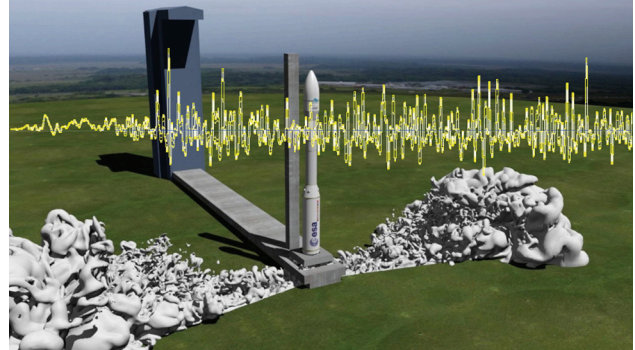
Transient analysis at transonic conditions



Pitching moment comparison with WTT data

## Requirements

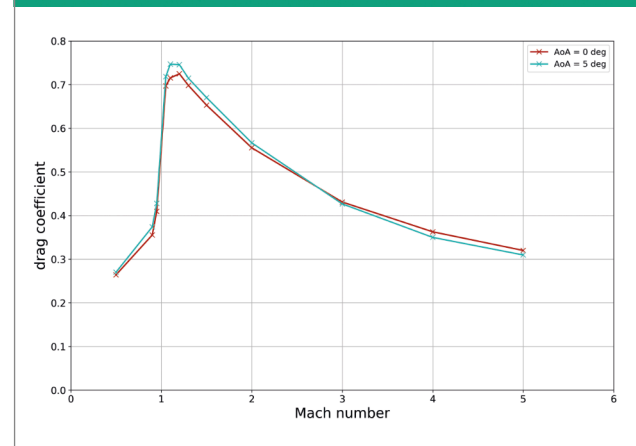
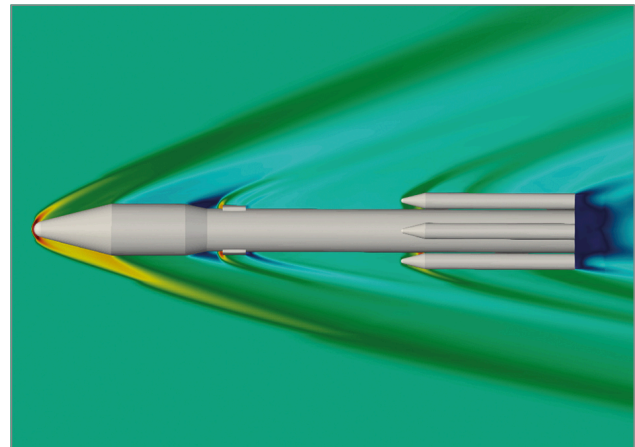
- NVIDIA GPU
  - For a workstation: RTX 2080 or bigger, ideally RTX 3090
  - For a server: RTX 6000 or bigger, ideally Tesla A100
- Appr. 1GB device RAM
  - Per 10 million cells
- Appr. 3GB of system memory
  - Per 10 million cells
- Windows or LINUX OS



Acoustic loads and blast wave analysis

## Availability

- Coupled with ASTOS
- Definition of parameters and geometry within the ASTOS GUI
- Command line interface for dedicated detailed aerodynamic tasks



Global aerodynamic coefficients for generic vehicle