Test Environment Working Group

Test Case 1

Version 2
August 20, 2024

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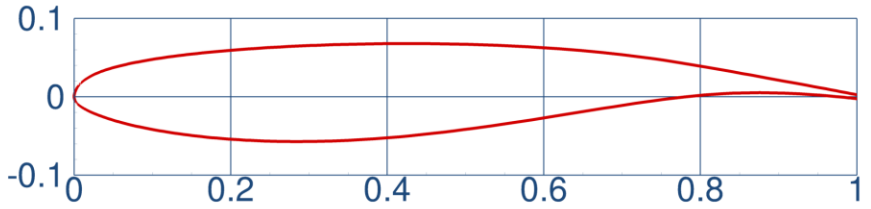
Test Case 1: ONERA OAT15A Geometry & Data

- **Geometry is available here: (it is very strongly desired to use the provided IGES file in the ONERA OAT15A zip file and not the raw coordinates)**
  https://aiaa-dpw.larc.nasa.gov/geometry.html
- **Committee-supplied RANS grids are available here**
  https://aiaa-dpw.larc.nasa.gov/grids.html
- **Experimental data are available here**
  https://aiaa-dpw.larc.nasa.gov/experiment.html

Test Case 1: Workshop-Wide Validation

Jaquin, et al. "Experimental Study of Shock Oscillation over a Transonic Supercritical Profiles." AIAA Journal, Vol. 47, No. 9, 2009. Pages 1985-1994.



ONERA OAT15A Transonic Airfoil

- **Validation of steady CFD analysis, required**
- **Users are encouraged to employ best practices**
- **Settings**
  - Steady CFD (e.g., RANS)
  - Prefer some version of SA, multiple turbulence models can be submitted
  - Use periodic boundary conditions for sidewall boundary conditions
- **Grids**
  - Six-member grid family; four are required, six are desirable
  - Encourage use of committee-supplied grids; user-generated grids are acceptable
  - Three committee-supplied once-cell-wide grid topologies are provided
- **Conditions**
  - Mach 0.73, Re_c=3m (based on chord length), T_{static}=271 K (487.8 R)
  - Alpha: 1.36, 1.50, 2.50, 3.00, 3.10
  - Experimental conditions (for reference): P_{total}=102.4 kPa; P_{static}=71.8 kPa

Test Case 1: Data Submission (In Work)

- **Please follow these instructions**
  https://aiaa-dpw.larc.nasa.gov/postprocessing.html
- **Required data**
  - Forces and Moments
    `DPW8-AePW4_ForceMomentAveraged_v1.dat`
  - Surface cuts
    `DPW8-AePW4_SectionalCutsAveraged_v1.dat`
  - Convergence data (in work)
    `DPW8-AePW4_Convergence_v1.dat`
- **Optional data set supplement**
  - Boundary layer profile data (in work)
    `DPW8-AePW4_BoundaryLayerAveraged_v1.dat`

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