

# R-011 ONERA-DLR

- **Flow solver:** CFD by ONERA, DLR, and Airbus (CODA)  
CODA is the computational fluid dynamics (CFD) software being developed as part of a collaboration between the French Aerospace Lab ONERA, the German Aerospace Center (DLR), Airbus, and their European research partners. CODA is jointly owned by ONERA, DLR and Airbus
- **Spatial discretization:** cell-centered Finite-Volume
  - Roe Upwind Scheme, extended Green-Gauss gradients
- **Turbulence model:** SA-neg
- **Iteration method:** (approximate) Jacobian-free Newton-Krylov method with Pseudo-Transient Continuation
- **Convergence/stopping criteria:**
  - Case 1: reduction of residual for each equation by at least 9 orders relative to free-stream conditions
  - Case 2: variable number of iterations until the variation of CD on the last 20% of the iteration is less than 10 drag counts
- **Cases submitted:**
  - 1: 1.R.01 (1v - 11v), 1.R.04 (1v -15v), 1.R.07 (coarse - xfine), 1.R.09 (B - E), 2.1 (A, B, C), 2.2 (A, B), 2.3 (A) and 2.4 (A, B)
- **Grids:**
  - Case 1: 1.R.01, 1.R.04, 1.R.07, 1.R.09, Case 2: 2.R.03
- **Relevant publications related to solver and/or high-lift applications:**
  - [Aircraft Simulations Using the New CFD Software from ONERA, DLR, and Airbus](#)  
Volpiani, Chapelier, Schwöppe, Jägersküpper, Champagneux; Journal of Aircraft 2024, DOI: 10.2514/1.C037506