R-020 & JAXA (FaSTAR)

- **Flow solver:** JAXA's in-house unstructured solver, FaSTAR
- **Spatial discretization:** node-centered finite volume method, U-MUSCL for flux reconstruction, GLSQ for gradient calculation, HLLEW for inviscid fluxes, Hishida(vL) for slope limiter
- **Time integration or iteration method:** LU-SGS with CFL-fixed local time-stepping
- **Name of committee grids (or "self-prepared"):** case 1 (Pointwise 1.R.01, levels 01v to 11v; HeldenMesh 1.R.05, levels C-M-F), cases 2.1 to 2.4 (Pointwise 2.R.03, levels A-B-C)
- **Cases submitted:** case 1 and case 2 (2.1, 2.2, 2.3 and 2.4)
- **Initialization method:** tested both cold and warm started initialization strategies
- **Turbulence model:** case 1 (SA-noft2-R-QCR2000), case 2.1 (SA-noft2, SA-noft2-QCR2000, SA-noft2-R-QCR2000), case 2.2 (SA-noft2), 2.3 (SA-noft2), case 2.4 (SA-noft2)
- **Convergence/stopping criteria:** generally, CD, CL and CM do not change in the fourth decimal place during the last 1000 iterations. For high angles of attack not satisfying this criterion, simulations were simply stopped after 300,000-400,000 iterations. Some cases were run using Selective Frequency Damping and run longer.
- **Relevant publications related to solver and/or high-lift applications**

1. Hashimoto, A., Murakami, K., Aoyama, T., Ishiko, K., Hishida, M., Sakashita, M., and Lahur, P., "Toward the Fastest Unstructured CFD Code 'FaSTAR'," AIAA Paper 2012-1075, 2012.
2. Zauner, M., Sansica, A., Kojima, Y., Lusher, D. and Hashimoto, A. "RANS Sensitivity Study and Global Stability Analysis of the NASA Common Research Model High-Lift Configuration", AIAA Paper 2023-1568, 2023.
3. Sansica, A., Zauner, M. and Hashimoto, A., "Global Stability Analysis of the NASA Common Research Model High-Lift Configuration at Stall Conditions near CLmax", AIAA Paper 2024-0493, 2024.
4. Zauner, M., Matsuzaki, T., Sansica, A., Kojima, Y., Zehner, P., Lusher, D. and Hashimoto, A. "Sensitivity Study of Delayed Detached-Eddy Simulations of NASA's CRM-HL In-Tunnel and Free-Air", AIAA Paper 2024-2335, 2024.