SPICES-2020
Gridding Guidelines

1st January 2020

Note: The Configuration Geometry and Gridding Guidelines are current as of 1st January 2020, but are subject to changes as developments require. Please check the website periodically for updates.

1. Grid Guidelines:
a) Initial spacing normal to all viscous walls (RE = 1.432M based on Root Chord of 499 mm):
    1) tiny $y+ \sim 2.0$ dy = 0.0167 mm
    2) coarse: $y+ \sim 1.0$ dy = 0.0083 mm
    3) medium: $y+ \sim 2/3$ dy = 0.0055 mm
    4) fine: $y+ \sim 4/9$ dy = 0.0037 mm
    5) extra-fine: $y+ \sim 8/27$ dy = 0.0024 mm

b) Recommend grids have at least 2 cell layers of constant spacing normal to viscous walls.

c) Total grid size to grow ~3X between each grid level for grid convergence cases.

d) Grid convergence cases must maintain the same grid family between grid levels, i.e. maintain the same stretching factors, same topology, etc.

e) Growth rate in the viscous layer (GR1) should be < 1.25 for all grids.

f) Farfield located at ~100 C_{REF}'s for all grid levels.

g) For the Medium Baseline Grids:
    i) Chordwise spacing for wing (LE) and trailing edge (TE)
       ~0.1% local chord.
    ii) Fine mesh at the base of the sting.
    iii) Fine mesh at the wing tip region.
    iv) Fine mesh to capture the wake.

h) For the Coarse and Fine Baseline Grids, the above values should be scaled accordingly.

i) For the proposed configuration:
    i) Minimum of 2 cells across TE base for the tiny mesh.
    i) Minimum of 4 cells across TE base for the coarse mesh.
    ii) Minimum of 6 cells across TE base for the medium mesh.
    iii) Minimum of 8 cells across TE base for the fine mesh.
    iv) Minimum of 12 cells across TE base for the extra-fine mesh.

    Note: Sting geometry will also be provided. Participants wishing to include this also in the simulation, are free to do so.