# REPORT

학과: 항공기계공학과

과목: 전산유체해석실습

학번: 2023010586

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교수: 임동균 교수님

제출날짜: 11/13 (목)

CHEONGJU UNIVERSITY

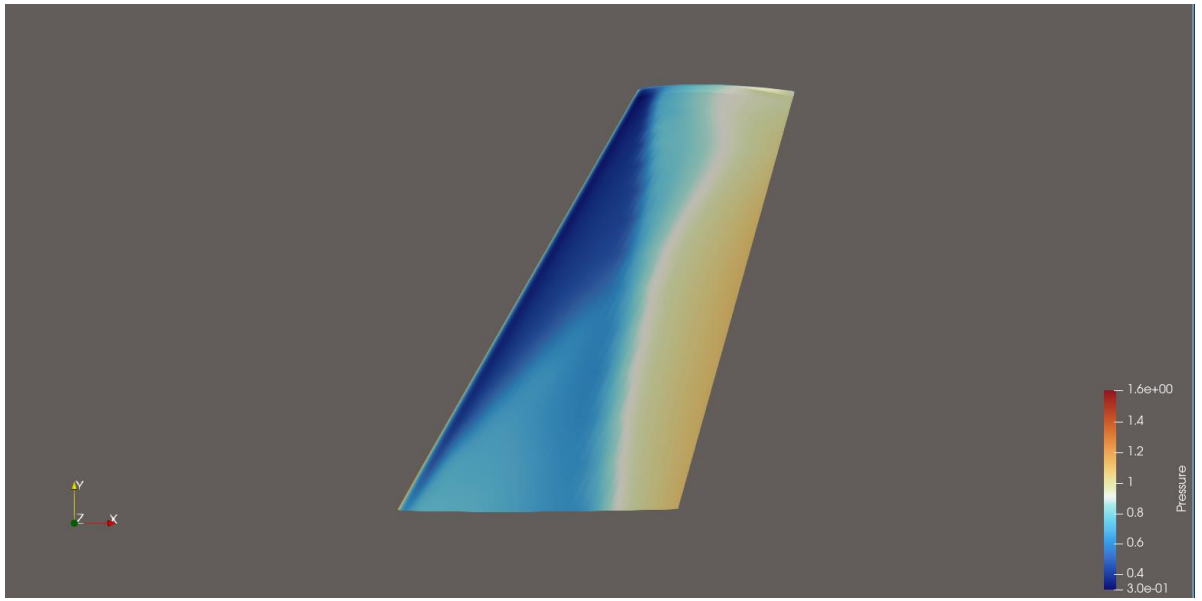
# 3D ONERA M6
# Case_2565

# Case_2565

```
% ------------------- COMPRESSIBLE FREE-STREAM DEFINITION -------------------%
%
% Mach number (non-dimensional, based on the free-stream values)
MACH_NUMBER= 0.8372
%
% Angle of attack (degrees, only for compressible flows)
AOA= 6.06
%
% Side-slip angle (degrees, only for compressible flows)
SIDESLIP_ANGLE= 0.0

% Reynolds number (non-dimensional, based on the free-stream values)
REYNOLDS_NUMBER= 11.71E6


% ------------------------ INPUT/OUTPUT INFORMATION ------------------------%
%
% Mesh input file
MESH_FILENAME= mesh_ONERAM6_turb_hexa_43008.su2
```

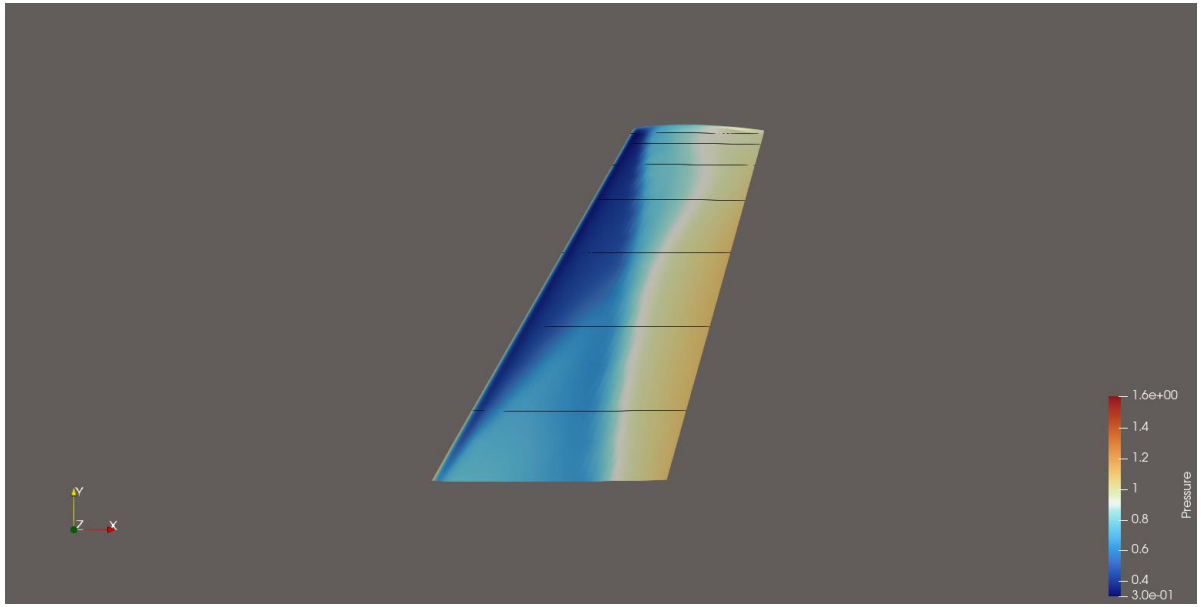
```
|         580|  2.9593e-01|   -8.592754|  -10.623939|    0.488831|    0.051689|
|         581|  2.9587e-01|   -8.596311|  -10.626519|    0.488832|    0.051689|
|         582|  2.9582e-01|   -8.599867|  -10.629096|    0.488832|    0.051689|
|         583|  2.9578e-01|   -8.603422|  -10.631669|    0.488832|    0.051689|
|         584|  2.9574e-01|   -8.606976|  -10.634238|    0.488833|    0.051689|
|         585|  2.9570e-01|   -8.610529|  -10.636803|    0.488833|    0.051689|
|         586|  2.9567e-01|   -8.614081|  -10.639365|    0.488833|    0.051689|
|         587|  2.9577e-01|   -8.617632|  -10.641923|    0.488833|    0.051689|
|         588|  2.9589e-01|   -8.621183|  -10.644477|    0.488834|    0.051689|
|         589|  2.9585e-01|   -8.624732|  -10.647027|    0.488834|    0.051689|
|         590|  2.9583e-01|   -8.628280|  -10.649573|    0.488834|    0.051689|
|         591|  2.9582e-01|   -8.631826|  -10.652115|    0.488834|    0.051689|
|         592|  2.9580e-01|   -8.635372|  -10.654653|    0.488835|    0.051689|
|         593|  2.9581e-01|   -8.638917|  -10.657186|    0.488835|    0.051689|

---------------------------- Solver Exit -----------------------------
All convergence criteria satisfied.
+-----------------------------------------------------------------------+
|      Convergence Field     |     Value    |   Criterion  | Converged |
+-----------------------------------------------------------------------+
|                 Cauchy[CD]|   9.96198e-07|       < 1e-06|        Yes|
+-----------------------------------------------------------------------+
-------------------------------------------------------------------------
+-----------------------------------------------------------------------+
|       File Writing Summary       |             Filename               |
+-----------------------------------------------------------------------+
|SU2 binary restart                |restart_flow.dat                    |
|Paraview                          |flow.vtu                            |
|Paraview surface                  |surface_flow.vtu                    |
+-----------------------------------------------------------------------+
```

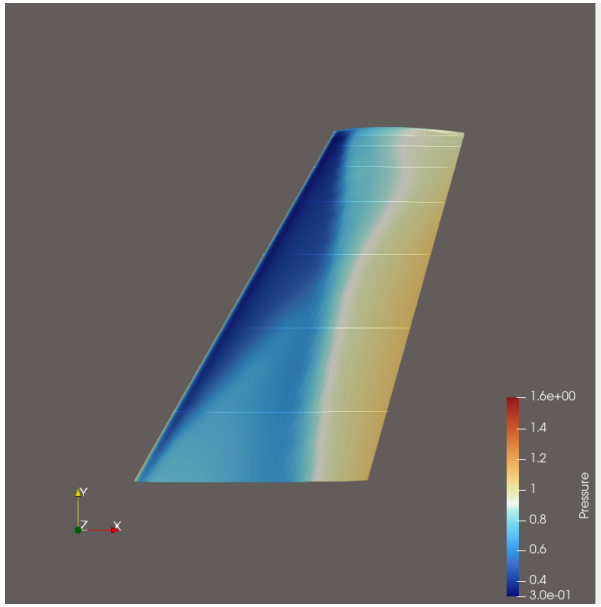
# Case_2565

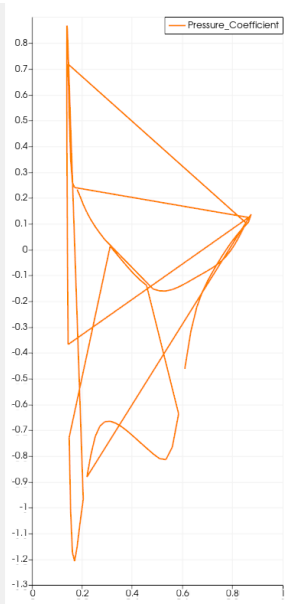


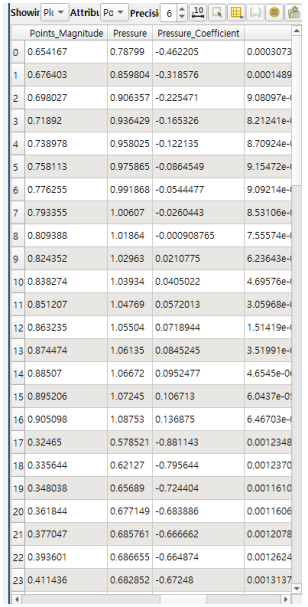

- Slice [y/b]

1. 0.2 : 1.1963 x 0.2= 0.23926
2. 0.44 : 0.526372
3. 0.65 : 0.777595
4. 0.8 : 0.95704
5. 0.9 : 1.07667
6. 0.96 : 1.148448
7. 0.99 : 1.184337



| | Points_Magnitude | Pressure | Pressure_Coefficient | |
|---|---|---|---|---|
| 0 | 0.654167 | 0.78799 | -0.462205 | 0.0003073 |
| 1 | 0.676403 | 0.859804 | -0.318576 | 0.0001489 |
| 2 | 0.698027 | 0.906357 | -0.225471 | 9.08097e-4 |
| 3 | 0.71892 | 0.936429 | -0.165326 | 8.21241e-4 |
| 4 | 0.738978 | 0.958025 | -0.122135 | 8.70924e-4 |
| 5 | 0.758113 | 0.975865 | -0.0864549 | 9.15472e-4 |
| 6 | 0.776255 | 0.991868 | -0.0544477 | 9.09214e-4 |
| 7 | 0.793355 | 1.00607 | -0.0260443 | 8.53106e-4 |
| 8 | 0.809388 | 1.01864 | -0.000908765 | 7.55574e-4 |
| 9 | 0.824352 | 1.02963 | 0.0210775 | 6.23643e-4 |
| 10 | 0.838274 | 1.03934 | 0.0405022 | 4.69576e-4 |
| 11 | 0.851207 | 1.04769 | 0.0572013 | 3.05968e-4 |
| 12 | 0.863235 | 1.05504 | 0.0718944 | 1.51419e-4 |
| 13 | 0.874474 | 1.06135 | 0.0845245 | 3.51991e-4 |
| 14 | 0.88507 | 1.06672 | 0.0952477 | 4.6545e-04 |
| 15 | 0.895206 | 1.07245 | 0.106713 | 6.0437e-04 |
| 16 | 0.905098 | 1.08753 | 0.136875 | 6.46703e-4 |
| 17 | 0.32465 | 0.578521 | -0.881143 | 0.0012348 |
| 18 | 0.335644 | 0.62127 | -0.795644 | 0.0012370 |
| 19 | 0.348038 | 0.65689 | -0.724404 | 0.0011610 |
| 20 | 0.361844 | 0.677149 | -0.683886 | 0.0011606 |
| 21 | 0.377047 | 0.685761 | -0.666662 | 0.0012078 |
| 22 | 0.393601 | 0.686655 | -0.664874 | 0.0012624 |
| 23 | 0.411436 | 0.682852 | -0.67248 | 0.0013137 |

# Case_2565

| Points_0 | Pressure_Coefficient |
|---|---|
| 0.862639 | 0.124314 |
| 0.852113 | 0.103352 |
| 0.841095 | 0.080554 |
| 0.829395 | 0.058028 |
| 0.816856 | 0.035395 |
| 0.803354 | 0.013503 |
| 0.788795 | -0.00732 |
| 0.773115 | -0.02607 |
| 0.756281 | -0.04286 |
| 0.738284 | -0.05735 |
| 0.71914 | -0.07032 |
| 0.698886 | -0.08222 |
| 0.677583 | -0.09409 |
| 0.655305 | -0.10637 |

→

| | |
|---|---|
| 0.986043 | 0.124314 |
| 0.971728 | 0.103352 |
| 0.956744 | 0.080554 |
| 0.940833 | 0.058028 |
| 0.923781 | 0.035395 |
| 0.905419 | 0.013503 |
| 0.88562 | -0.00732 |
| 0.864296 | -0.02607 |
| 0.841403 | -0.04286 |
| 0.816928 | -0.05735 |
| 0.790893 | -0.07032 |
| 0.763349 | -0.08222 |
| 0.734378 | -0.09409 |
| 0.704081 | -0.10637 |

→

| | | | | | |
|---|---|---|---|---|---|
| 1 | 0.138175 | 0.867924 | 2 | 0.862639 | 0.124314 |
| 1 | 0.139949 | 0.851923 | 2 | 0.852113 | 0.103352 |
| 1 | 0.142917 | -0.36765 | 2 | 0.841095 | 0.080554 |
| 1 | 0.147197 | -0.72744 | 2 | 0.829395 | 0.058028 |
| 1 | 0.152925 | -1.01229 | 2 | 0.816856 | 0.035395 |
| 1 | 0.160135 | -1.17348 | 2 | 0.803354 | 0.013503 |
| 1 | 0.168783 | -1.20685 | 2 | 0.788795 | -0.00732 |
| 1 | 0.178839 | -1.15156 | 2 | 0.773115 | -0.02607 |
| 1 | 0.190329 | -1.05983 | 2 | 0.756281 | -0.04286 |
| 1 | 0.203289 | -0.96692 | 2 | 0.738284 | -0.05735 |
| 1 | 0.217725 | -0.88114 | 2 | 0.71914 | -0.07032 |
| 1 | 0.233622 | -0.79564 | 2 | 0.698886 | -0.08222 |
| 1 | 0.250939 | -0.7244 | 2 | 0.677583 | -0.09409 |
| 1 | 0.269615 | -0.68389 | 2 | 0.655305 | -0.10637 |
| 1 | 0.28957 | -0.66666 | | | |
| 1 | 0.310711 | -0.66487 | | | |

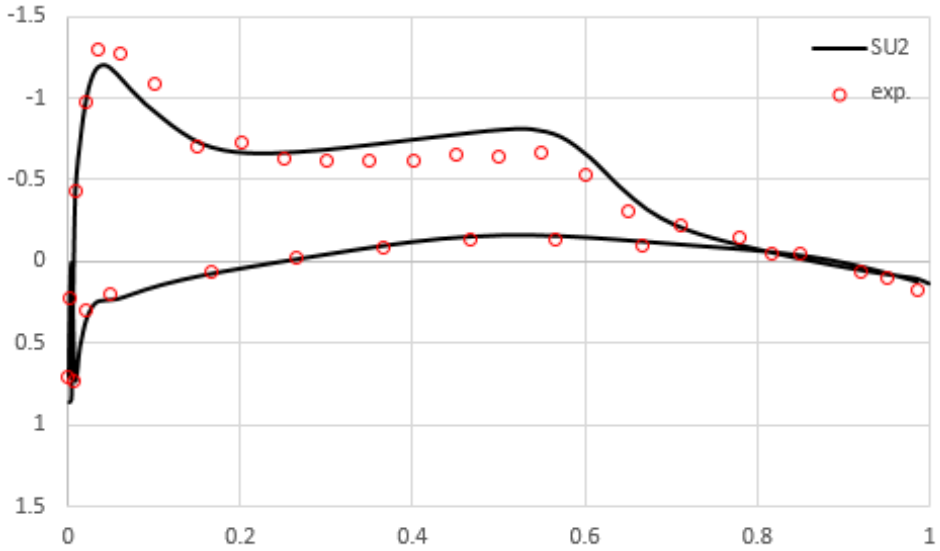
[SU2 Data]

&

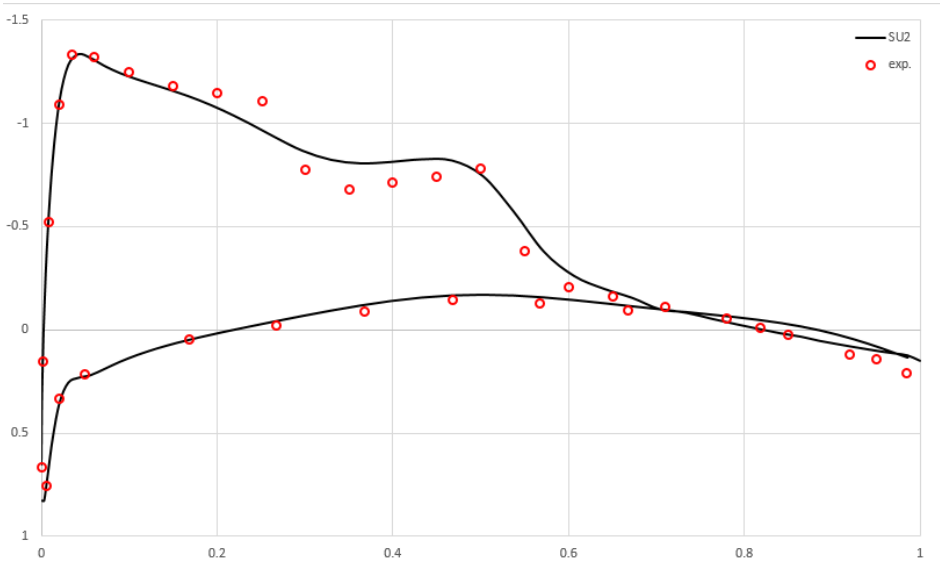
| | | x/c | | cp |
|---|---|---|---|---|
| 1.00E+00 | 1.20E+01 | 9.50E-01 | -7.26E-03 | 9.64E-02 |
| 1.00E+00 | 1.10E+01 | 8.16E-01 | -2.19E-02 | -4.99E-02 |
| 1.00E+00 | 1.00E+01 | 6.66E-01 | -3.59E-02 | -9.92E-02 |
| 1.00E+00 | 9.00E+00 | 5.66E-01 | -4.30E-02 | -1.29E-01 |
| 1.00E+00 | 8.00E+00 | 4.66E-01 | -4.77E-02 | -1.38E-01 |
| 1.00E+00 | 7.00E+00 | 3.66E-01 | -4.89E-02 | -8.42E-02 |
| 1.00E+00 | 6.00E+00 | 2.66E-01 | -4.70E-02 | -2.16E-02 |
| 1.00E+00 | 5.00E+00 | 1.66E-01 | -4.19E-02 | 6.55E-02 |
| 1.00E+00 | 4.00E+00 | 4.99E-02 | -2.97E-02 | 2.06E-01 |
| 1.00E+00 | 3.00E+00 | 2.00E-02 | -2.27E-02 | 2.96E-01 |
| 1.00E+00 | 2.00E+00 | 5.93E-03 | -1.33E-02 | 7.33E-01 |
| 1.00E+00 | 1.00E+00 | 3.40E-04 | 2.92E-03 | 7.02E-01 |
| 1.00E+00 | 3.40E+01 | 2.16E-03 | 8.02E-03 | 2.19E-01 |
| 1.00E+00 | 3.30E+01 | 8.66E-03 | 1.59E-02 | -4.28E-01 |
| 1.00E+00 | 3.20E+01 | 2.04E-02 | 2.29E-02 | -9.71E-01 |

[exp Data]

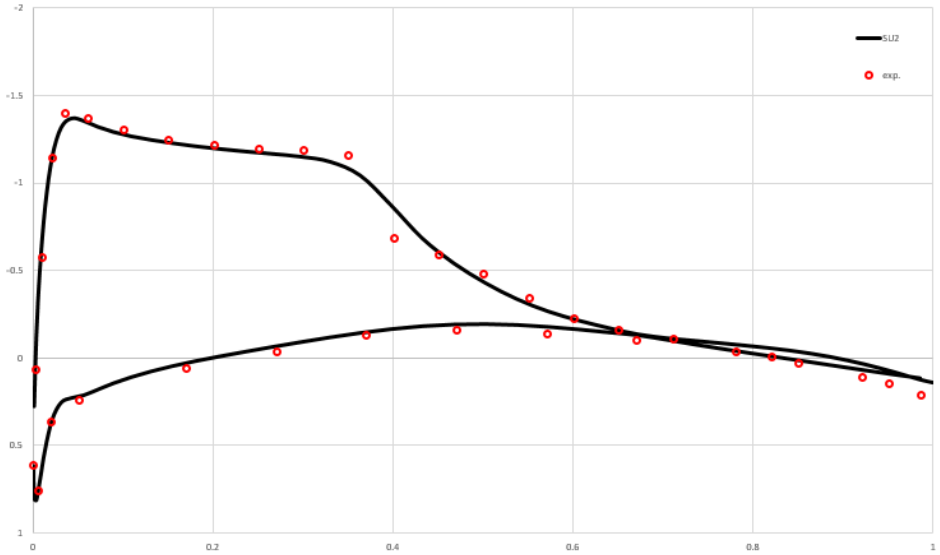
# Case_2565



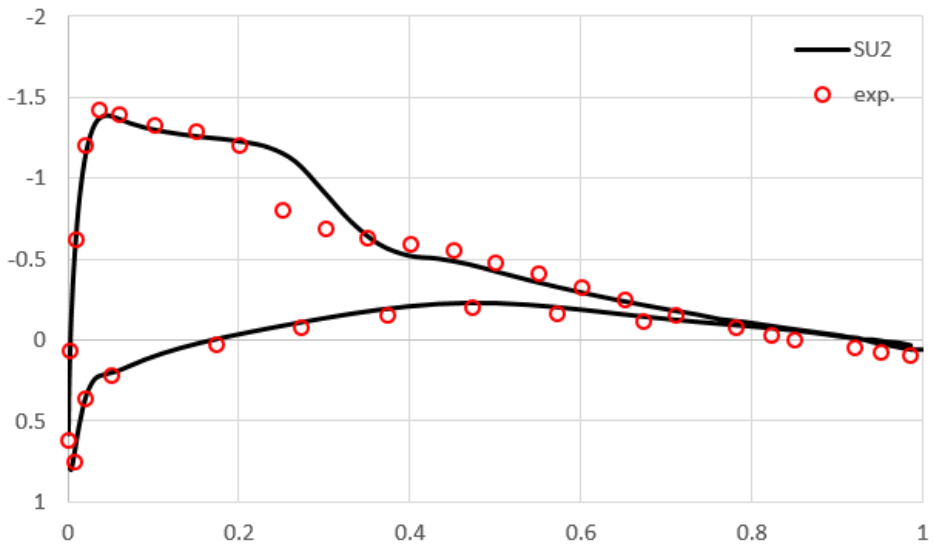

[ y/b=0.2 ]




[ y/b=0.44 ]

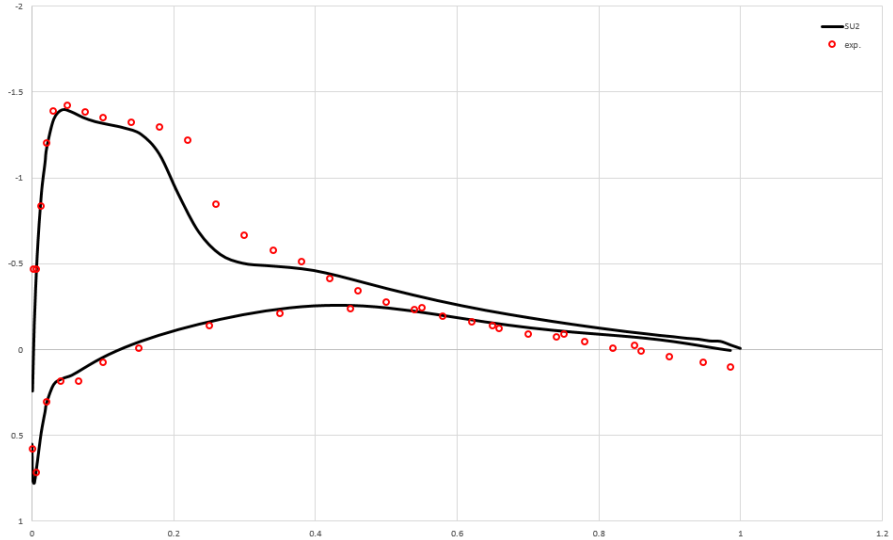


[ y/b=0.65 ]

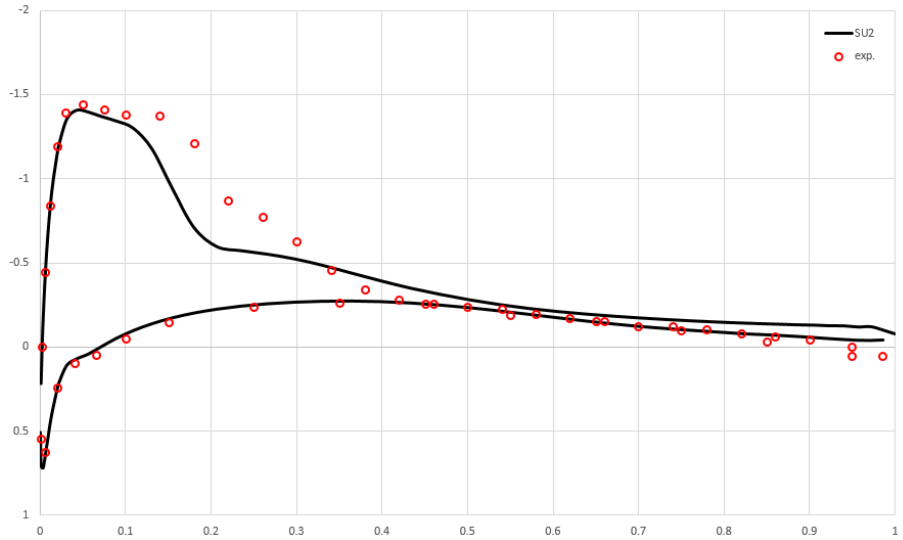



[ y/b=0.8 ]

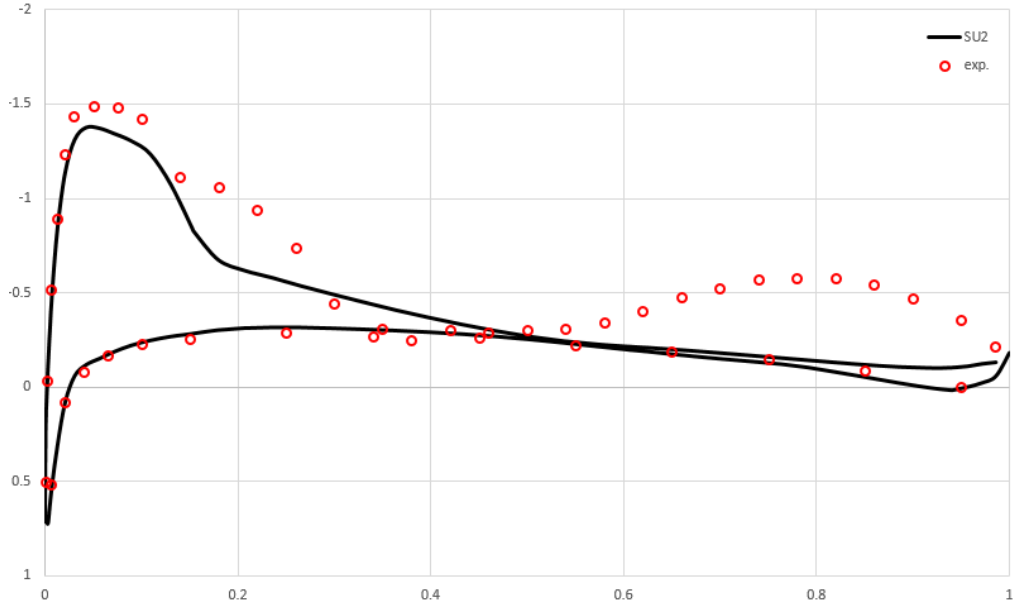
# Case_2565




[ y/b=0.9 ]




[ y/b=0.96 ]




[ y/b=0.99 ]