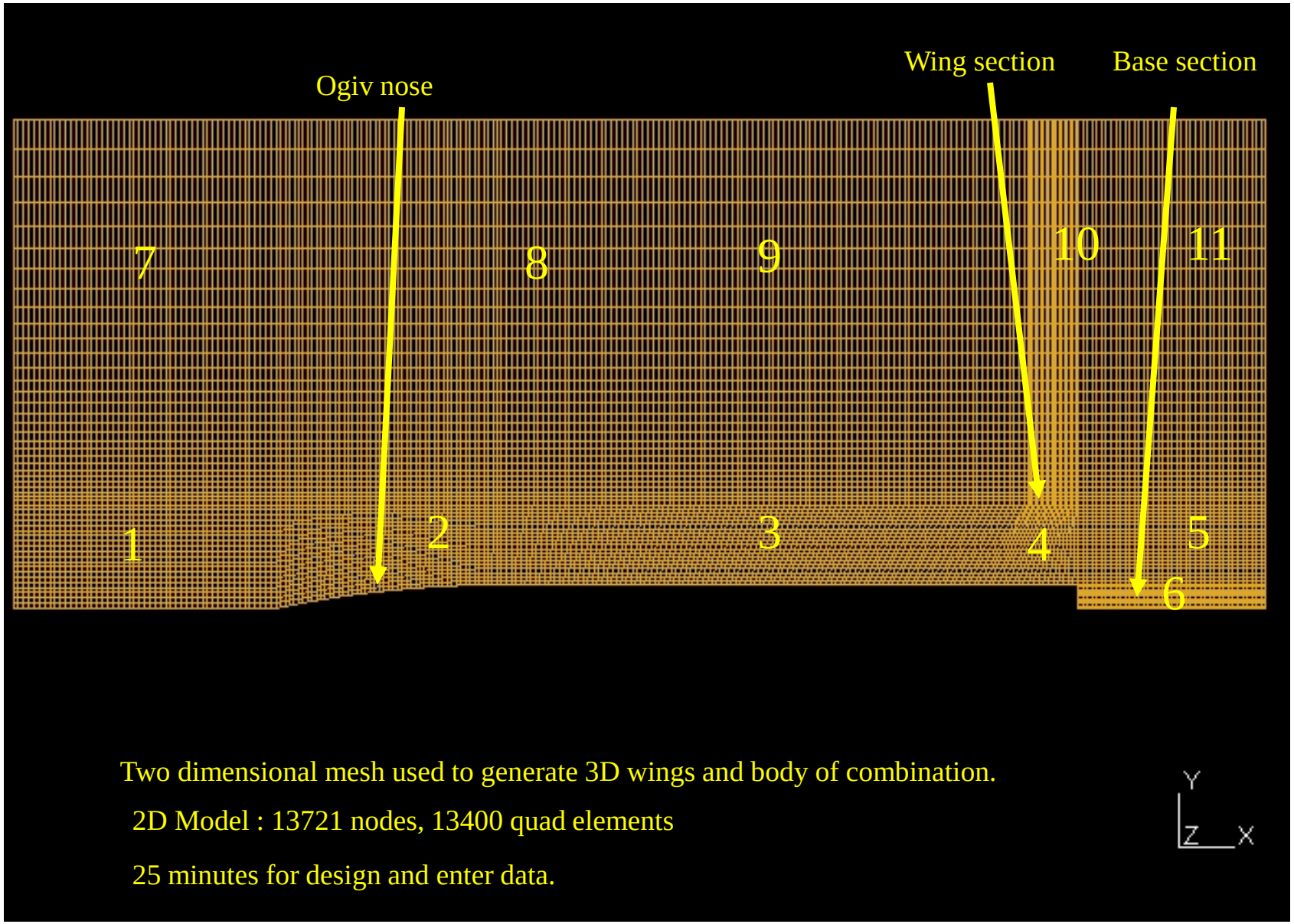
Javelin Rocket

- Mesh generation procedure :
  - Create 2D mesh (11 zones)
    - 13721 nodes, 13400 quads
    - 25 minutes
  - Sweep 2D mesh around the axis to create 3D mesh (Hexa, Penta, pyramid, tetrahedral)
    - 12 seconds run time
    - 437740 nodes, 428832 cells
    - 64 pyramids
    - 2880 Penta-elements
    - 425888 Hexa-elements

- Hardware: Sony Vaio Pcg-k13 notebook
  - 2.8 Gz, 512K L2 cache, 768 mega RAM
- Suggest post-procesor (visualization tool):
  - GMSH

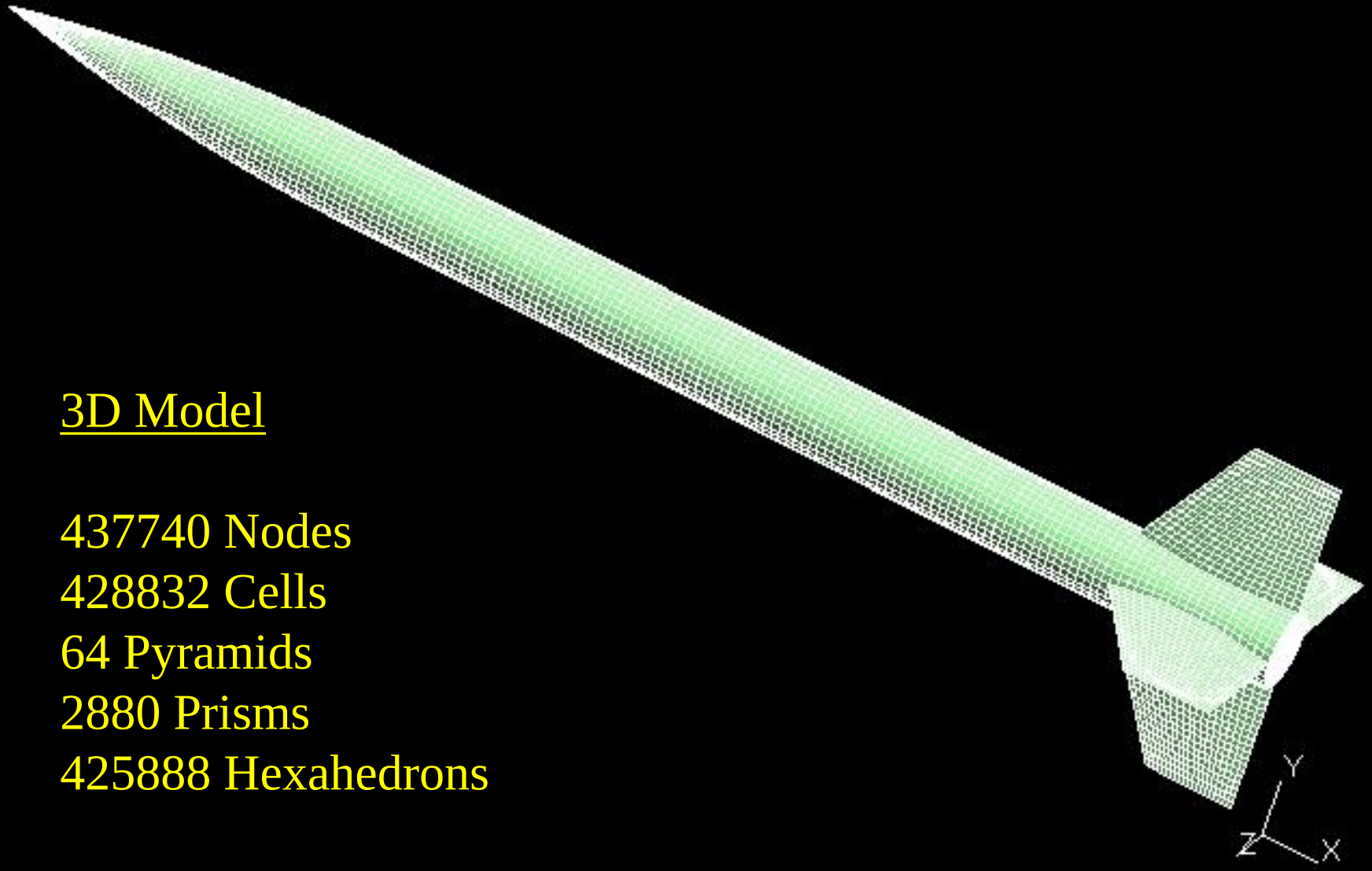
- Case 1. $M = 0.2$, $\alpha = 5^o$
- Case 2. $M = 1.2$, $\alpha = 10^o$
- Run time for each case is 25914 seconds
- Results : Mach number contour, Pressure contour and density contour



Two dimensional mesh used to generate 3D wings and body of combination.

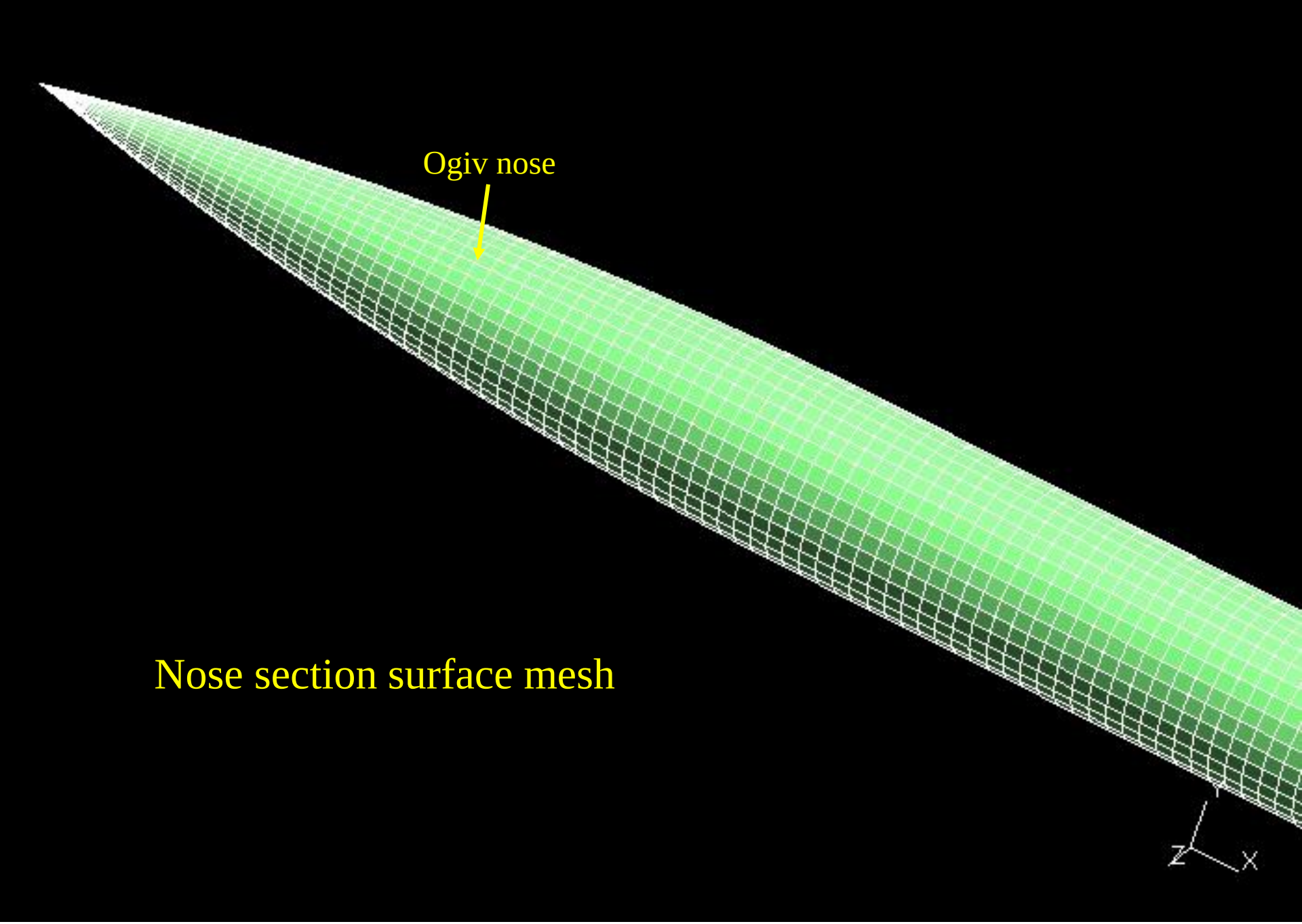
2D Model : 13721 nodes, 13400 quad elements

25 minutes for design and enter data.

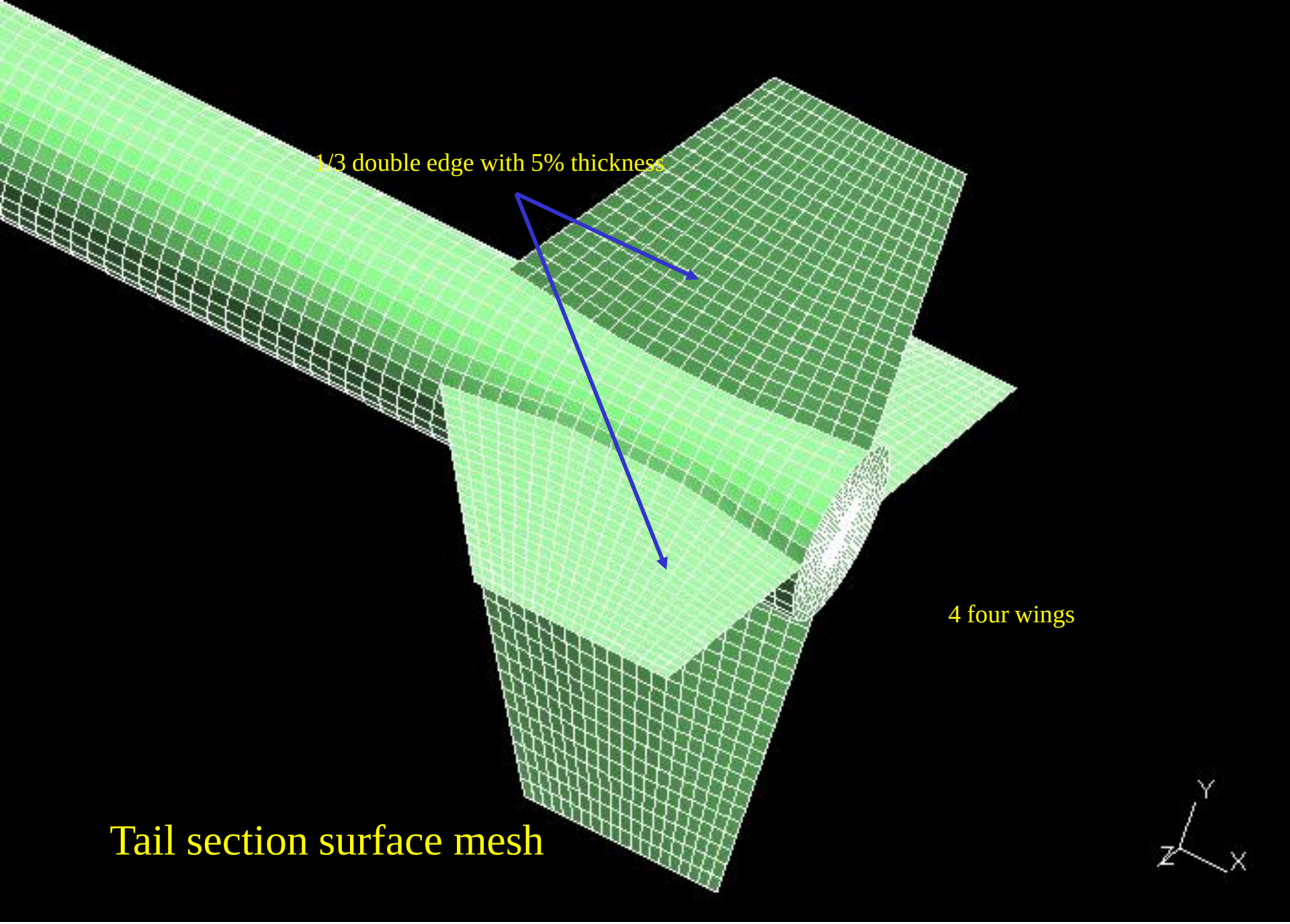


3D Model

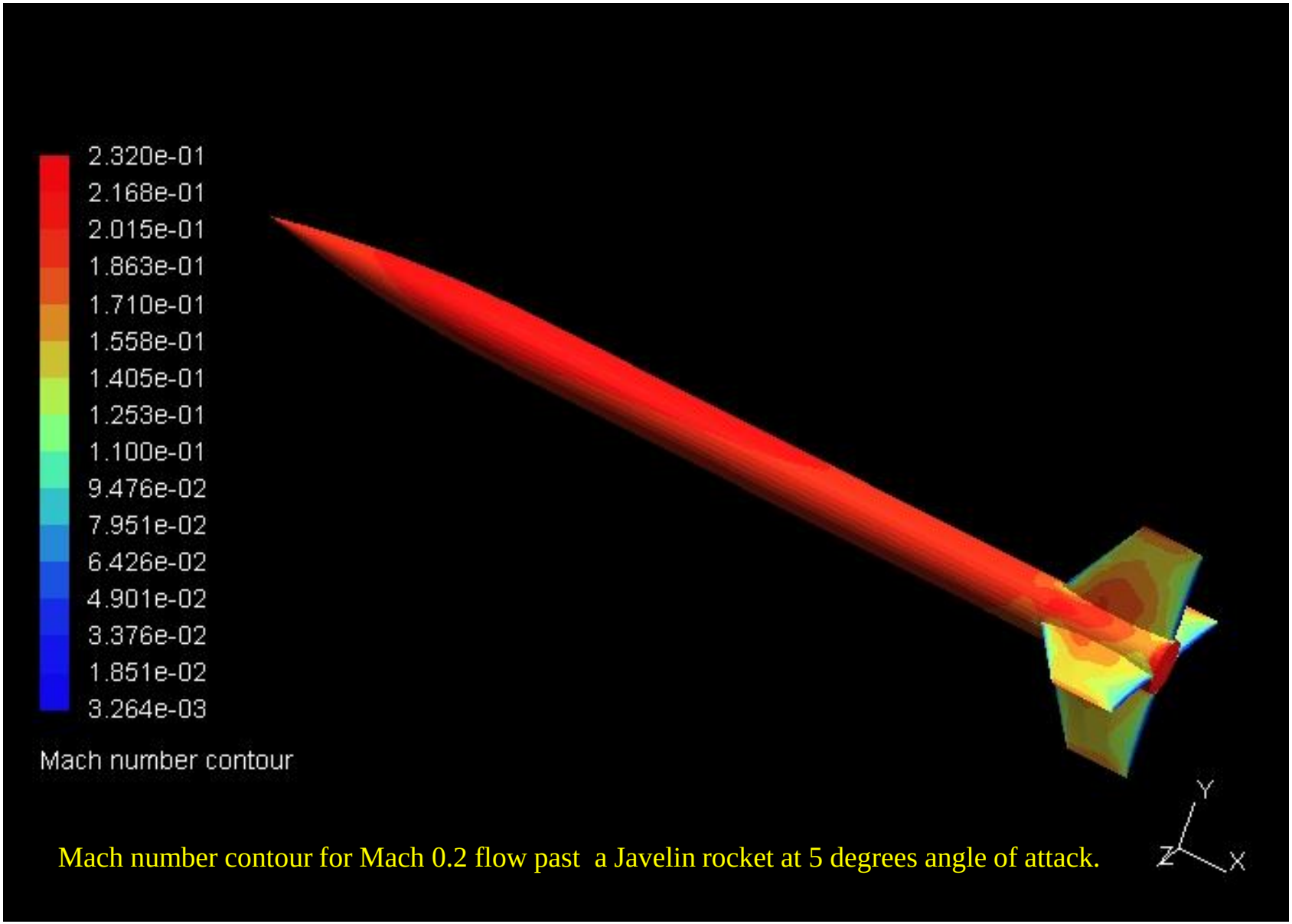
437740 Nodes
428832 Cells
64 Pyramids
2880 Prisms
425888 Hexahedrons



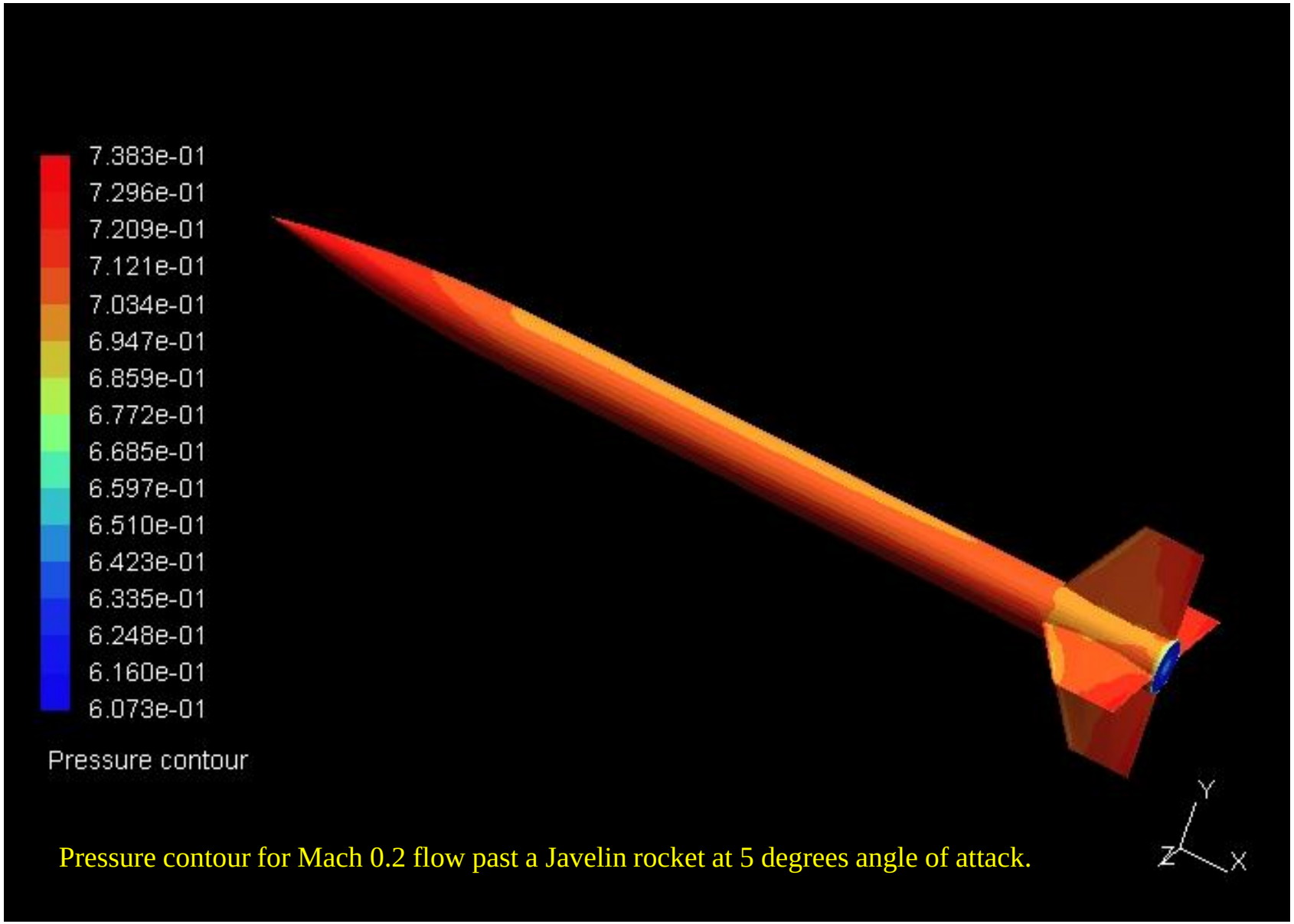
Nose section surface mesh



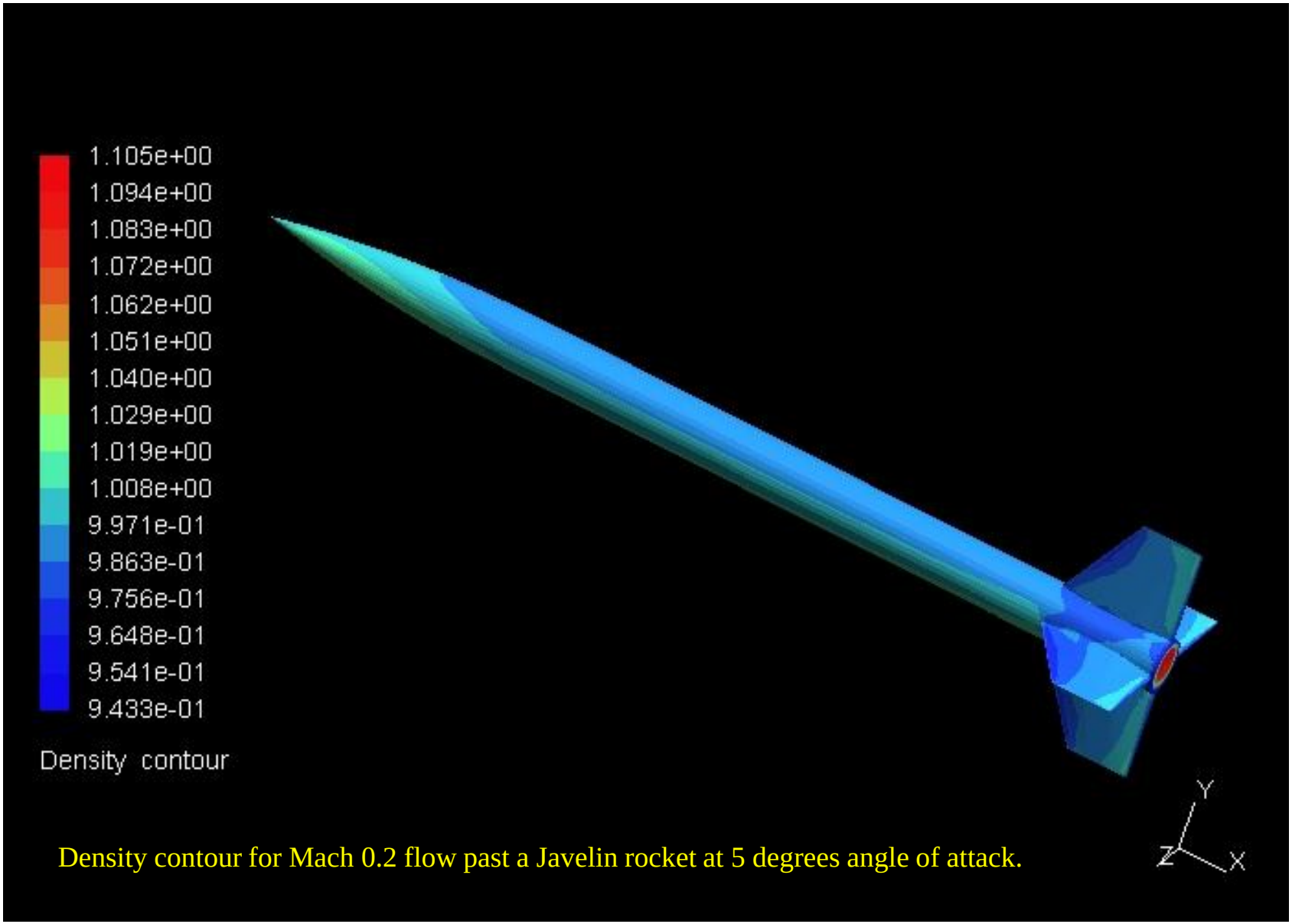
Tail section surface mesh



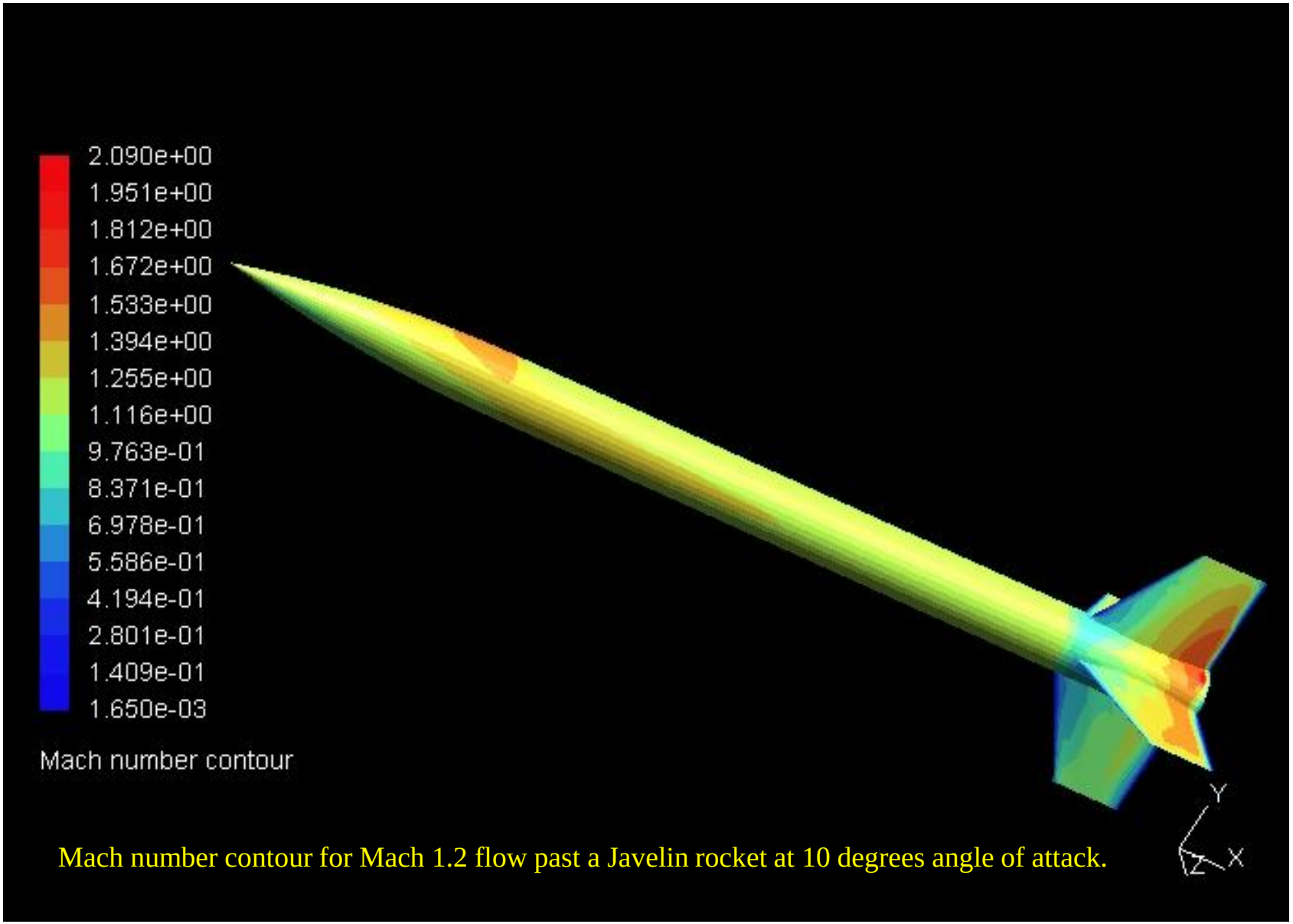
Mach number contour for Mach 0.2 flow past a Javelin rocket at 5 degrees angle of attack.



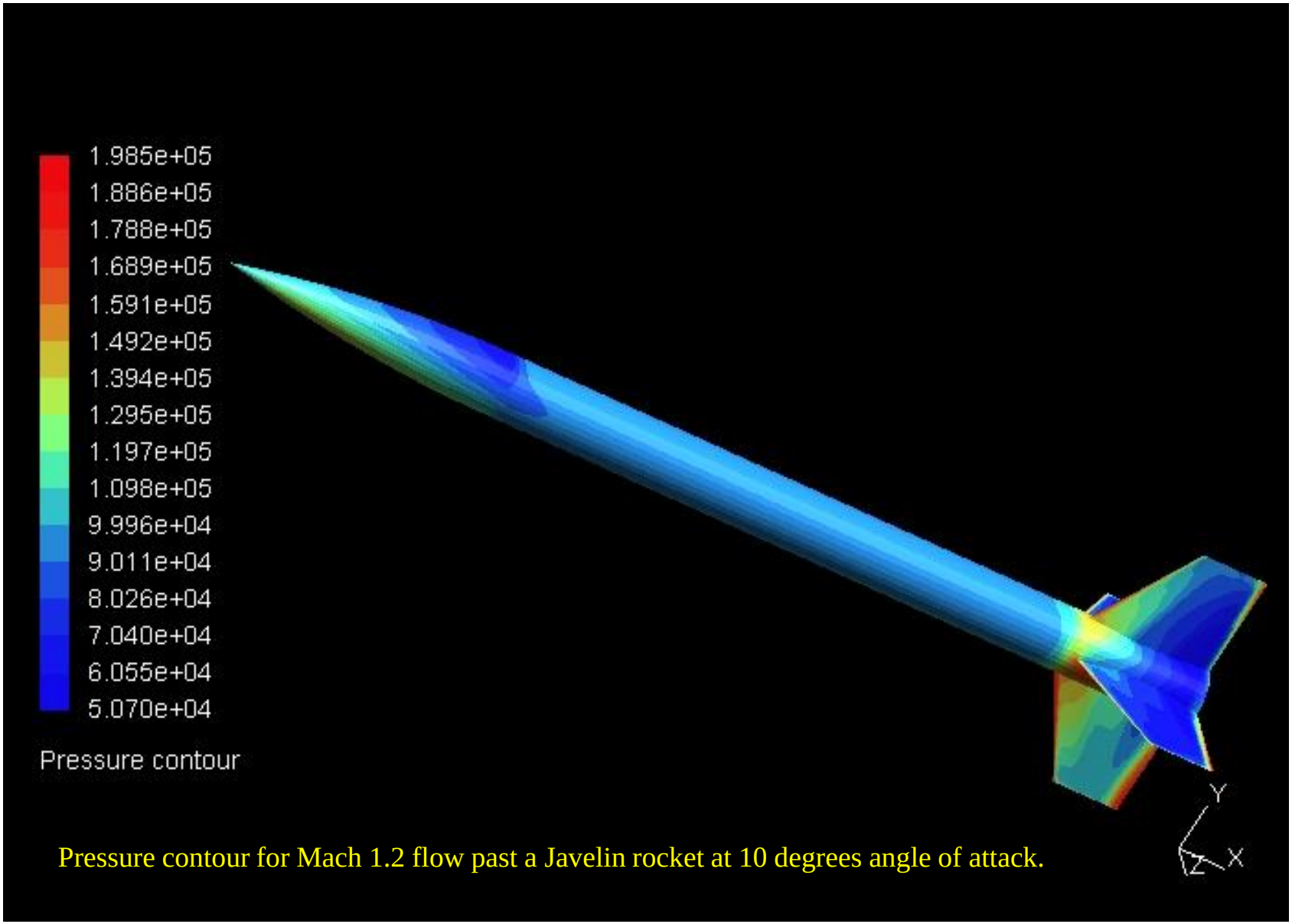
Pressure contour for Mach 0.2 flow past a Javelin rocket at 5 degrees angle of attack.



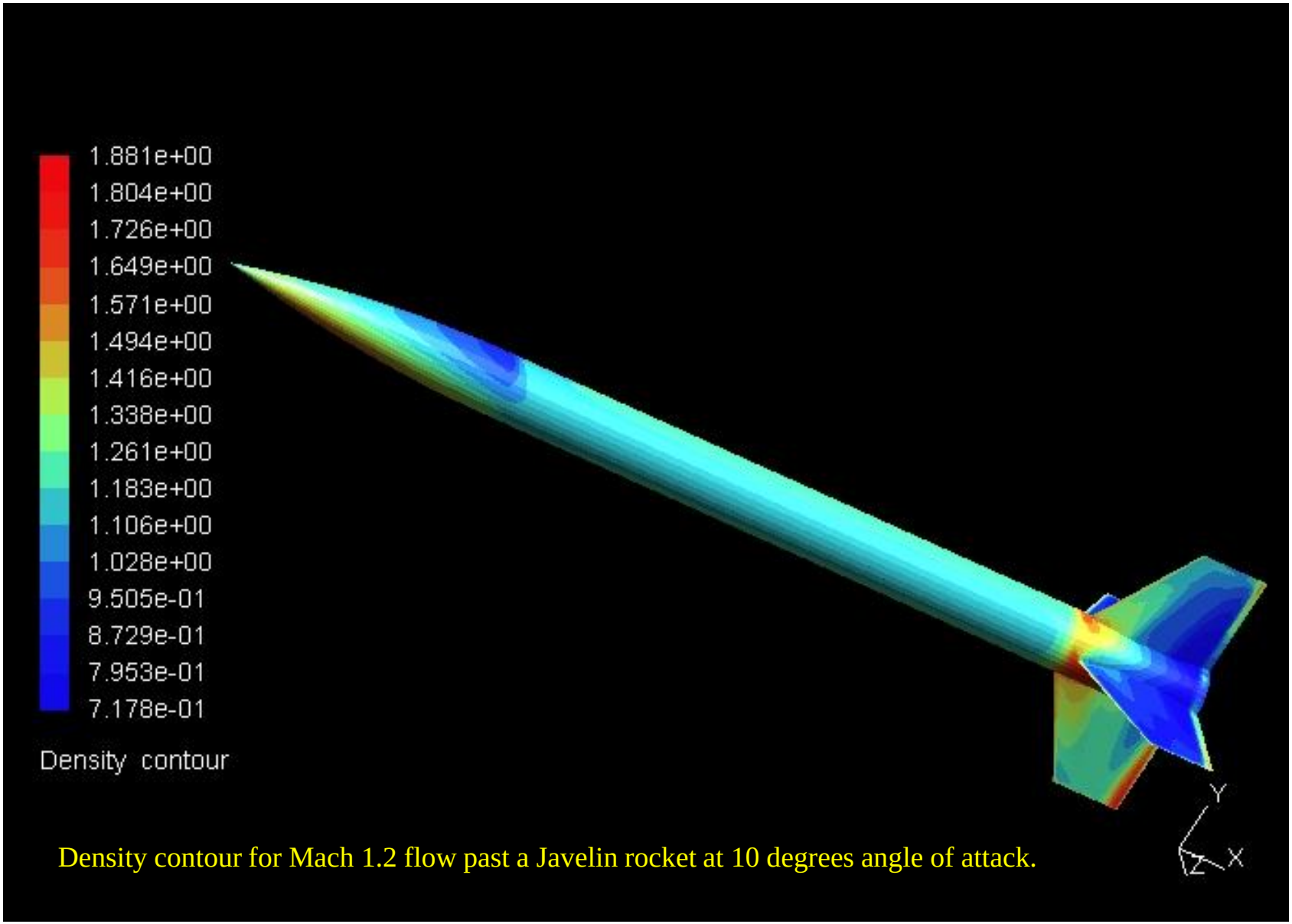
Density contour for Mach 0.2 flow past a Javelin rocket at 5 degrees angle of attack.



Mach number contour for Mach 1.2 flow past a Javelin rocket at 10 degrees angle of attack.



Pressure contour for Mach 1.2 flow past a Javelin rocket at 10 degrees angle of attack.



Density contour for Mach 1.2 flow past a Javelin rocket at 10 degrees angle of attack.