# A CFD Study on 2D SCRAM jet intake Using OpenFoam

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***Abstract***

SCRAM jet engines are external compression engines used for hypersonic flight vehicles. They comprise of an inlet spike over which most of the compression takes place due to the formation of shockwaves and cowl that deflects shocks into the engine. Now that space exploration has matured, there is a need to study and develop faster methods of propulsion. In this study we are going to validate the results from K. Sinha et al. (2016), simulate the case at on-design Mach No. for Different Angles of Attack, and Compare the variation of pressure in the isolator region at different Angles of Attack. The Geometry we are going to be simulating is shown in Fig 1 and the solver being used is the "rhoCentralFoam" solver.

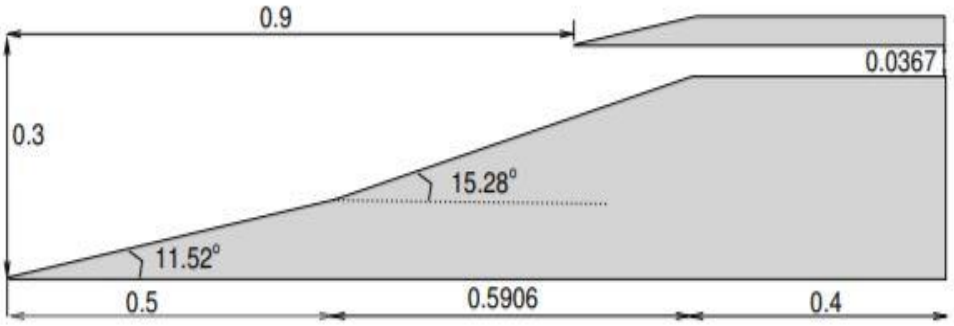


Fig 1 Hypersonic Inlet geometry

References

1. K.Sinha et al , "Parameteric study of the performance of two-dimensional Scramjet Intake", 18th Annual CFD Symposium, August 10-11, 2016, Bangalore.
2. OpenFoam User Guide
3. Hypersonic and High Temperature Gas Dynamics by John D .Anderson