

# NUMERICAL EXPLORATION OF STAGED HYDROGEN COMBUSTION IN A STRUT BASED SCRAMJET COMBUSTOR

Soumyajit Saha and Debasis Chakraborty

Directorate of Computational Dynamics

Defence Research and Development Laboratory (DRDL)

Kanchanbagh Post, Hyderabad - 500 058

Email: [debases\\_cfd@drdl.drdo.in](mailto:debases_cfd@drdl.drdo.in)/[debasis\\_drdl@yahoo.co.in](mailto:debasis_drdl@yahoo.co.in)

## Abstract

*Scramjet combustor with fuel injection from strut and wall is numerically simulated using three-dimensional Navier Stokes equations along with  $k - \epsilon$  turbulence model. Turbulence-chemistry interaction is modeled through Eddy Dissipation Concept (EDC) based on infinitely fast rate kinetics. The simulations captured all the essential features of flow field for various combinations of fuel injections from the strut and the wall. The computed surface pressures match very well with the experimental values for both reacting and non-reacting cases. Performance parameters are evaluated from the computed flow variables. It was found that more fuel could be injected in the scramjet combustor through staged injection without inlet – combustor interaction.*

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