

An Accurate Prediction of Surface Temperature History in a Supersonic Flight

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Abstract : In the present study, the surface temperature history of the adaptor part in a two-stage supersonic launch vehicle is accurately predicted. The full Navier-Stokes equations are used to estimate the aerodynamic heat flux. The one-dimensional heat conduction in solid phase is used to compute the temperature history. The instantaneous surface temperature is used to improve the applied heat flux, to improve the accuracy of the results.

Keywords : aerodynamic heating, heat conduction, numerical simulation, supersonic flight, launch vehicle

Conference Title : ICFMHTT 2014 : International Conference on Fluid Mechanics, Heat Transfer and Thermodynamics

Conference Location : Istanbul, Turkey

Conference Dates : December 05-06, 2014