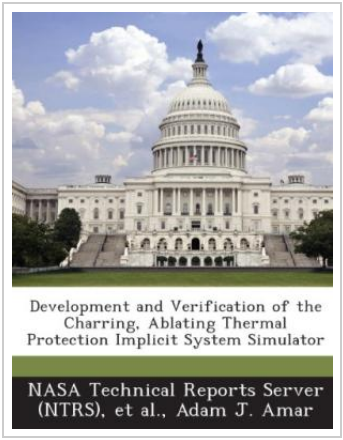

Development and Verification of the Charring, Ablating Thermal Protection Implicit System Simulator (Paperback)

By Adam J Amar

Bibliogov, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book ***** Print on Demand *****.The development and verification of the Charring Ablating Thermal Protection Implicit System Solver (CATPISS) is presented. This work concentrates on the derivation and verification of the stationary grid terms in the equations that govern three-dimensional heat and mass transfer for charring thermal protection systems including pyrolysis gas flow through the porous char layer. The governing equations are discretized according to the Galerkin finite element method (FEM) with first and second order fully implicit time integrators. The governing equations are fully coupled and are solved in parallel via Newton s method, while the linear system is solved via the Generalized Minimum Residual method (GMRES). Verification results from exact solutions and Method of Manufactured Solutions (MMS) are presented to show spatial and temporal orders of accuracy as well as nonlinear convergence rates.

Reviews

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