

High Fidelity System Simulation of Multiple Components in Support of the UEET Program

NASA Technical Reports Server (NTRS), et al., Ronald C. Plybon



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By Ronald C. Plybon

BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 46 pages. Dimensions: 9.7in. x 7.4in. x 0.1in.The High Fidelity System Simulation effort has addressed various important objectives to enable additional capability within the NPSS framework. The scope emphasized High Pressure Turbine and High Pressure Compressor components. Initial effort was directed at developing and validating intermediate fidelity NPSS model using PD geometry and extended to high-fidelity NPSS model by overlaying detailed geometry to validate CFD against rig data. Both feedforward and feedback approaches of analysis zooming was employed to enable system simulation capability in NPSS. These approaches have certain benefits and applicability in terms of specific applications feedback zooming allows the flow-up of information from high-fidelity analysis to be used to update the NPSS model results by forcing the NPSS solver to converge to high-fidelity analysis predictions. This apporach is effective in improving the accuracy of the NPSS model; however, it can only be used in circumstances where there is a clear physics-based strategy to flow up the high-fidelity analysis results to update the NPSS system model. Feedforward zooming approach is more broadly useful in terms of enabling detailed analysis at early stages of design for a specified...



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