

1. Record Nr.	UNINA9910782754203321
Titolo	Advanced hypersonic test facilities [[electronic resource] /] / edited by Frank Lu, Dan Marren
Pubbl/distr/stampa	Reston, Va., : American Institute of Aeronautics and Astronautics, c2002
ISBN	1-60086-667-0 1-60086-448-1
Descrizione fisica	1 online resource (646 p.)
Collana	Progress in astronautics and aeronautics ; ; v. 198
Altri autori (Persone)	LuFrank K MarrenDan E
Disciplina	629.132306
Soggetti	Aerodynamics, Hypersonic Hypersonic wind tunnels Ballistic ranges Rocket sleds
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	""Cover""; ""Title""; ""Copyright""; ""Table of Contents""; ""Preface""; ""Chapter 1 Hypersonic Ground Test Requirements""; ""I. Introduction""; ""II. History, Status, and Outlook for Hypersonic Test Requirements""; ""III. Potential Civilian Hypersonic Test Requirements Futures""; ""A. Planetary Exploration""; ""B. Access to Space""; ""IV. Military Hypersonic Test Requirements Futures""; ""A. Access to Space""; ""B. Missiles""; ""V. Conclusion""; ""References""; ""Chapter 2 Principles of Hypersonic Test Facility Development""; ""I. Introduction""; ""II. Critical Hypersonic Technologies"" ""III. Hypersonic Scaling""""IV. High Enthalpy and High Speed""; ""V. Types of Hypersonic Facilities""; ""VI. Conclusions""; ""Acknowledgments""; ""References""; ""Chapter 3 NASA's HYPULSE Facility at GASL A Dual Mode, Dual Driver Reflected-Shock/Expansion Tunnel""; ""I. Introduction""; ""A. Background""; ""B. Scope of the Chapter""; ""II. Shock Tunnels and Expansion Tubes""; ""A. Shock-Heated Facilities""; ""B. Reflected-Shock Tunnels""; ""C. Shock-Expansion Tubes""; ""III. Driver Methods""; ""A. Lighter Gases""; ""B.

Electrically Heated Light Gases""

""C. Combustion Heated Light Gases""""D. Compressively Heated Light Gases (Free-Piston Driver)""; ""E. Summary of Comparison of Driver Techniques""; ""F. The Shock-Induced Detonation Driver for HYPULSE""; ""IV. Operation and Performance of HYPULSE""; ""A. Facility Configuration and Sizing""; ""B. HYPULSE Operation""; ""C. Test Conditions Verification""; ""D. Test Time Determination""; ""V. Driver Gas Contamination in Detonation-Driven RST Mode""; ""A. Nozzle Flow""; ""B. Transient Development of Driver-Gas Leakage""; ""VI. Nozzle Design for Expansion Tunnel Mode Operation"" ""A. Skimmer Nozzles""""B. Full Capture Contoured Inlet Asymptoting to a Conical Profile""; ""C. Verification with Experiments""; ""VII. Concluding Remarks""; ""Acknowledgments""; ""References""; ""Chapter 4 LENS Hypervelocity Tunnels and Application to Vehicle Testing at Duplicated Flight Conditions""; ""I. Introduction""; ""II. Ground Test Simulation of Hypersonic Flight Performance""; ""III. Design, Operation, and Performance of the LENS I and LENS II Hypervelocity Ground Test Facilities""; ""A. Introduction""; ""B. Design and Operation of the LENS I and II Shock Tunnels"" ""C. Aerothermal, Aero-Optic, and Radiation Instrumentation Suites"""" IV. Facility Validation""; ""V. Application of Test Facility and Instrumentation to Hypersonic Vehicle Testing""; ""A. Evaluation of the Aerothermal and Aero-optical Characteristics of High-Speed Interceptors""; ""B. Examples of Aerothermal Measurements to Evaluate Seekerhead Performance""; ""C. Example of Aero-Optic Measurements on Interceptor Seekerhead Configurations""; ""VI. Measurements of Jet Interaction Resulting from Divert Thruster Operation""; ""A. Introduction""; ""B. Flowfield and Aerothermal Characteristics"" ""C. Spectrometer and Radiometer Measurements of Flowfield Obscuration Phenomena""
