

1. Record Nr.	UNISALENT0991002272009707536
Autore	Censorinus
Titolo	Censorini De die natali liber / recensuit et emendavit Otto Jahn
Pubbl/distr/stampa	Hildesheim : G. Olms, 1965
Edizione	[Rist. anast.]
Descrizione fisica	XXIV, 109 p. ; 21 cm
Altri autori (Persone)	Jahn, Ottoauthor
Disciplina	878.01
Lingua di pubblicazione	Latino
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Rist. anast. dell'ed.: Berlin, 1845
2. Record Nr.	UNISA996466739003316
Autore	Rezunkov Yuri A.
Titolo	High power laser propulsion // Yuri A. Rezunkov
Pubbl/distr/stampa	Cham, Switzerland : , : Springer, , [2021] ©2021
ISBN	3-030-79693-0
Descrizione fisica	1 online resource (307 pages)
Collana	Springer Series on Atomic, Optical, and Plasma Physics ; ; v.116
Disciplina	629.134353
Soggetti	Propulsion systems Lasers in astronautics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Intro -- Preface -- Acknowledgments -- Contents -- About the Author -- Abbreviations -- Chapter 1: A Brief History of Laser Propulsion -- 1.1 Introduction -- 1.2 Main Stages of Laser-Propulsion Developments

-- 1.3 Physical Processes Underlying Laser Propulsion -- 1.3.1 General Classification of the Laser-Propulsion Phenomena -- 1.3.2 Basic Thrust Characteristics of Laser-Propulsion Engines -- 1.4 General Concepts of Laser Propulsion -- 1.4.1 Launching Space Vehicles into Low Earth Orbits with Laser Propulsion -- 1.4.2 Laser Propulsion for the Correction of LEO Satellites -- 1.4.3 Interorbital Missions of Space Vehicles with the Laser Propulsion -- 1.5 Original Concepts of High-Power Laser Propulsion -- 1.5.1 The ``4P'' Vehicles -- 1.5.2 Lightcraft Technology Demonstrator (LTD) -- 1.5.3 Laser Impulse Space Propulsion-LISP -- 1.5.4 Principal Concept Design of the High-power Laser-Propulsion Systems -- References -- Chapter 2: Basic Gas-Dynamic Theories of the Laser Air-Breathing and Rocket Propulsion -- 2.1 Introduction -- 2.2 Gas-dynamic Theory of Laser Propulsion -- 2.2.1 Specific Properties of Pulsejet Laser Propulsion -- 2.2.2 Rocket Laser Propulsion at Space Conditions -- 2.2.2.1 Choice of a Propellant for Space Laser Propulsion -- 2.2.2.2 Determination of the Jet Nozzle Designs -- 2.3 Physics of Laser Plasma Ignited in Gases as Applied to Laser Propulsion -- 2.3.1 Model of Multi-Ionized Plasma Ignited by Laser Pulses in Gases -- 2.3.2 Conversion Efficiency of Laser Power into Plasma Temperature -- 2.4 Numerical Calculations of Non-stationary and Non-isentropic Gas Flows as Applied to Laser Propulsion -- 2.4.1 Perfect Gas Flow Models and Numerical Algorithms to Calculate Gas Flow of Pulsejet Laser Propulsion -- 2.4.2 Model of Equilibrium (Thermal) Plasma -- 2.4.3 Model of Non-equilibrium Plasma as Applied to Pulsejet Laser Propulsion.
2.4.4 Discussion on the Applicability of Various Models of Plasma Ignited -- References -- Chapter 3: Laser Ablation of Solid Materials, Laser Ablation Propulsion -- 3.1 Introduction -- 3.2 Physical Phenomena Underlying of Laser Ablation Propulsion -- 3.2.1 Basic Concept of Developed Evaporation of High-Melting and Low-Melting Materials -- 3.2.2 Simplified Gas-Dynamics Model of Laser ablation Propulsion -- 3.2.3 ``Absorption Explosion'' Model of Plasma Ignition at Laser Ablation of Solid Targets -- 3.2.4 Gas-Dynamic Models of the Laser Radiation Interaction with Ionized Gas (Gaseous Plasma) -- 3.3 Effects of Solid Target Structure on Laser Ablation Propulsion -- 3.3.1 Direct Laser Ablation Propulsion -- 3.3.2 Combined Laser Ablation Propulsion -- 3.3.3 Confined Laser Ablation of Multilayer Structured Targets -- 3.4 Laser Ablation Propulsion Based on Ablation of High-Energy Polymers -- 3.4.1 Basic Plasma-chemical Reactions Proceeding in the CHO-Polymer Vapor Under Laser Radiation -- 3.4.2 Similarity Laws of Laser Ablation Propulsion Based on Polymer Propellants -- 3.5 Semi-empirical Models of Laser ablation Propulsion Based on CHO-Polymers -- 3.5.1 Gas-Dynamics of the Laser Ablation Propulsion -- 3.5.2 Vapor and Plasma Models of the Laser ablation Propulsion Using Critical Laser Power Flux -- 3.6 Efficiency of the Laser Ablation Propulsion Based on CHO-Polymers -- References -- Chapter 4: Aerospace Laser-Propulsion Engine -- 4.1 Introduction -- 4.2 The Aerospace Laser-Propulsion Engine Conception -- 4.2.1 Designing of Two-Mirror Beam Concentrator -- 4.2.2 Optical Model of the Two-Mirror Beam Concentrator -- 4.2.3 Numerical Techniques to Develop the Two-Mirror Beam Concentrator -- 4.3 ASLPE Thrust Characteristics in a Pulsed Mode of Operation -- 4.4 Adaptation of ASLPE for Continuous Wave (CW) Laser Propulsion -- 4.4.1 Principles of CW Laser Propulsion.
4.4.2 CW ASLPE Thrust Characteristics -- 4.5 Analysis of Available Technologies as Applied to ASLPE Development and its Engineering Constraints -- 4.5.1 Effects of Slit on Thrust Production -- 4.5.2 Thermo-physical Model of the ASLPE Device -- 4.6 Preliminary

Conclusion -- References -- Chapter 5: Supersonic Laser Propulsion -- 5.1 Introduction -- 5.2 Lightcraft Engineering Version Adapted to the Pulsejet Supersonic Laser Propulsion -- 5.2.1 Perspective Designs of the Lightcraft -- 5.2.2 Intermediate Conclusion -- 5.3 Physical Phenomena Going with Ramjet Supersonic Laser Propulsion -- 5.3.1 Gas-Dynamics Effects Induced by Lasers in a Supersonic Gas Flow -- 5.4 Merging of Individual Shock Waves into a Quasi-Stationary Integrated Shock Wave -- 5.5 Supersonic Laser Ablation Propulsion -- 5.5.1 The Effects of Gas Jet Injection into Supersonic Gas Flows -- 5.5.2 Theoretical Model of Supersonic Laser Ablation Propulsion -- 5.5.3 Thrust Characteristics of Supersonic Laser Ablation Propulsion -- 5.5.4 Peculiar Properties of Thrust Production at the Supersonic Laser Ablation Propulsion -- 5.6 Conclusion -- References -- Chapter 6: Space Mini-vehicles with Laser Propulsion -- 6.1 Introduction to the Problem -- 6.2 Scenario of the SMV Orbital Maneuvers -- 6.3 Space Debris Removal Out of Geosynchronous Earth Orbit (GEO) by Using Laser-Propelled Space Mini-vehicles -- 6.4 Onboard Laser-Propulsion System as Applied to SMV -- 6.4.1 Receiver Telescope -- 6.4.2 Optical Turret -- 6.4.3 Optical Switch -- 6.4.4 The Unit of Laser-Propulsion Engines -- 6.4.5 Requirements to Optical Elements of the Onboard Laser-Propulsion System -- 6.5 Brief Outcome -- References -- Chapter 7: Laser Power Transfer to Space Vehicles with Laser Propulsion -- 7.1 Introduction into the Problem. 7.2 Models of the Aerosols and Gases Attenuation, Absorption, and Scattering of Laser Radiation in the Upper Atmosphere -- 7.2.1 Models of the Atmospheric Aerosols and Gases -- 7.2.2 Nonlinear Effects Developed During Propagation of High-Power Laser Radiation in the Upper Atmosphere -- 7.3 Self-Empirical Models of the Upper Atmosphere Turbulence -- 7.4 Phase and Intensity Profiles of the Laser Beam That Passed Through a Turbulent Atmosphere -- 7.4.1 Tentative Conclusion -- 7.5 Basic Atmospheric Effects Limiting Delivery of the Airborne Laser Power to Space Vehicle -- 7.5.1 Scenario of Laser Power Delivery to a Space Vehicle -- 7.5.2 Turbulence Effects on a Laser Beam as Applied to High-Power Laser Propulsion -- 7.6 Adaptive Laser Systems for the High-Power Laser Propulsion -- 7.6.1 Statement of the Problem -- 7.6.2 Adaptive Optical Laser Circuits and Special Equipment -- 7.6.2.1 Beam Wave Front Analyzers (BWA) -- 7.6.2.2 Beam Wave Front Phase Correctors -- 7.6.3 Laser Adaptive Optical Systems as Applied to Beaming a Remote Target -- 7.6.3.1 Linear Adaptive Laser Systems -- 7.6.3.2 Nonlinear Adaptive System Based on the Interaction of Laser Radiations with a Nonlinear Optical Medium -- 7.6.4 Principal Outcomes -- References -- Conclusion -- Index.
