

# Fundamentals Of Shaped Charges

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*Behavior of Materials under Impact, Explosion, High Pressures and Dynamic Strain Rates* - Maxim Yu. Orlov 2022-10-31

This book presents the results of experimental and theoretical studies of the destruction of solids under impact, explosion, high pressures, and strain rates. The content identifies the basic laws of the destruction of bodies under dynamic

loads. The results of numerical studies were obtained using numerical methods on the Lagrangian, Euler, and ALE approaches to the description of the motion of continuous media. Numerical methods and mathematical models have been tested by comparison with experimental data and well-known analytical solutions (for instance, Rankin–Hugoniot laws).

Experimental studies were performed on unique ballistic installations with the registration of fast processes (high-speed shooting). The results are used as new tests to verify the developing modeling methods. The research objects were metal multilayer plates, functionally graded materials, advanced, smart, and natural materials, etc. The book is interesting to specialists in the field of mathematical modeling and experimental methods for studying fast processes under dynamic loading.

**Opportunities in Protection Materials Science and Technology for Future Army Applications** - National Research Council

2011-08-27

Armor plays a significant role in the protection of warriors. During the course of history, the introduction of new materials and improvements in the materials already used to construct armor has led to better protection and a reduction in the weight of the armor. But even with such advances in materials, the weight of the armor

required to manage threats of ever-increasing destructive capability presents a huge challenge. *Opportunities in Protection Materials Science and Technology for Future Army Applications* explores the current theoretical and experimental understanding of the key issues surrounding protection materials, identifies the major challenges and technical gaps for developing the future generation of lightweight protection materials, and recommends a path forward for their development. It examines multiscale shockwave energy transfer mechanisms and experimental approaches for their characterization over short timescales, as well as multiscale modeling techniques to predict mechanisms for dissipating energy. The report also considers exemplary threats and design philosophy for the three key applications of armor systems: (1) personnel protection, including body armor and helmets, (2) vehicle armor, and (3) transparent armor. *Opportunities in Protection Materials Science and Technology*

for Future Army Applications recommends that the Department of Defense (DoD) establish a defense initiative for protection materials by design (PMD), with associated funding lines for basic and applied research. The PMD initiative should include a combination of computational, experimental, and materials testing, characterization, and processing research conducted by government, industry, and academia.

**Ryan's Ballistic Trauma** - Adam J. Brooks  
2011-05-23

Ryan's Ballistic Trauma 3rd Edition provides a concise guide to the clinical and operational issues surrounding the management of the ballistic casualty. This book crystallizes the knowledge and experience accrued by those dealing with ballistic trauma on a regular basis and extends this to those who have to manage these patients on an occasional basis only. Ryan's Ballistic Trauma 3rd Edition is a valuable reference tool for all medical and paramedical

personnel involved in the care of patients with ballistic injury. It is especially relevant for consultants and senior trainees in surgery, anesthesia and emergency medicine who are likely to be involved in the management of these unique injuries. This book is essential reading for pre-hospital care providers and nurses working in the emergency room, as well as military surgeons and medical and nursing staff on deployment in regions of conflict.

Armour - Paul J. Hazell 2022-09-20

Updated throughout for the new edition, *Armour: Materials, Theory, and Design* covers extant and emergent protection technologies driving advances in armour systems. Covering materials, theory and design, the book has applications in vehicle, ship, personnel and building use. Introducing a wide range of armour technologies, the book is a key guide to the technology used to protect against both blasts and ballistic attacks. Chapters cover bullets, blasts, jets and fragments, as well as penetration mechanics. The

new edition builds on the previous one, discussing ceramics and metallic materials as well as woven fabrics and composite laminates. Detailing modern technology advancements, the second edition has also been expanded to include improved explanations on shock mechanisms and includes significantly more figures and diagrams. An essential guide to armour technology, this book outlines key ways to implement protective strategies applicable for many types of conflict.

*Fundamentals of Light Microscopy and Electronic Imaging* - Douglas B. Murphy 2012-08-22

*Fundamentals of Light Microscopy and Electronic Imaging*, Second Edition provides a coherent introduction to the principles and applications of the integrated optical microscope system, covering both theoretical and practical considerations. It expands and updates discussions of multi-spectral imaging, intensified digital cameras, signal colocalization, and uses of objectives, and offers guidance in the selection of

microscopes and electronic cameras, as well as appropriate auxiliary optical systems and fluorescent tags. The book is divided into three sections covering optical principles in diffraction and image formation, basic modes of light microscopy, and components of modern electronic imaging systems and image processing operations. Each chapter introduces relevant theory, followed by descriptions of instrument alignment and image interpretation. This revision includes new chapters on live cell imaging, measurement of protein dynamics, deconvolution microscopy, and interference microscopy. PowerPoint slides of the figures as well as other supplementary materials for instructors are available at a companion website: [www.wiley.com/go/murphy/lightmicroscopy](http://www.wiley.com/go/murphy/lightmicroscopy)  
*Ballistics 2011* - Ernest Baker 2011-09  
Includes papers that were first presented at a September 2011 conference organized by the National Defense Industrial Association and the International Ballistics Society. This title includes

a CD-ROM that displays figures and illustrations in articles in full color along with a title screen and main menu screen.

*Guided Missiles: Fundamentals* - United States. Department of the Air Force 1972

Introduction to Hydrocodes - Jonas Zukas  
2004-01-20

A hydrocode refers to a computer program used for the study of the dynamic response of materials and structures to impulse (primary blast), impact (involving everything from car and aircraft collisions to impacts of space structures by assorted debris). The understanding of hydrocodes requires knowledge of numerical methods in the code as well as a keen understanding of the physics of the problem being addressed. This can take many years to learn via codes. There are currently a number of titles addressing the physics of high pressure and high rate material but nothing introducing the novice to the fundamentals of this highly

technical and complicated study. Introduction to Hydrocodes bridges the gap, bringing together the large body of literature, scattered through diverse journals, government and corporate reports and conference proceedings. As valuable as the text are the cited references and the combination will take years off the preparation time of future code users. Introduces complex physics essential for the understanding of hydrocodes Infused with over 30 years practical experience in the field Brings together a wide range of literature saving valuable research time  
*Terminal Ballistics* - Zvi Rosenberg 2012-03-02  
This monograph covers all important issues of terminal ballistics in a comprehensive way combining experimental data, numerical simulations and analytical modeling. It uses a unique approach to numerical simulations as sensitivity measure for the major physical parameters. In the first chapter, the book includes necessary details about the experimental equipment which are used for

ballistic tests. The second chapter covers essential features of the codes which are used in recent years all over the world, the Euler vs. Lagrange schemes, meshing techniques etc. The third chapter, devoted to the penetration mechanics of rigid rods, brings the update of modeling in this field. The fourth chapter deals with plate perforation and the fifth chapter deals with the penetration of shaped charge jets and eroding long rods. The last chapter includes several techniques for the disruption and defeating of the main threats in armor design. Throughout the book the authors demonstrate the advantages of the simulation approach in understanding the basis physics behind the investigated phenomena.

*Fundamentals of Computational Neuroscience* - Thomas Trappenberg 2010

The new edition of *Fundamentals of Computational Neuroscience* build on the success and strengths of the first edition. Completely redesigned and revised, it introduces the

theoretical foundations of neuroscience with a focus on the nature of information processing in the brain.

*Ballistics 18th International Symposium* - William G. Reinecke 1999-11-10

*Dynamic Armour* - Fouad Sabry 2022-01-16  
What Is Dynamic Armour Electric armour or electromagnetic armour is a type of reactive armour proposed for the protection of ships and armoured fighting vehicles from shaped charge and possibly kinetic weapons using a strong electric current, complementing or replacing conventional explosive reacting armour (ERA). How You Will Benefit (I) Insights, and validations about the following topics: Chapter 1: Dynamic armour Chapter 2: Reactive armour Chapter 3: Active protection system Chapter 4: Shaped charge Chapter 5: Defence Science and Technology Laboratory Chapter 6: Future Rapid Effect System Chapter 7: Materials science (II) Answering the public top questions about

dynamic armour. (III) Real world examples for the usage of dynamic armour in many fields. (IV) 17 appendices to explain, briefly, 266 emerging technologies in each industry to have 360-degree full understanding of dynamic armour' technologies. Who This Book Is For Professionals, undergraduate and graduate students, enthusiasts, hobbyists, and those who want to go beyond basic knowledge or information for any kind of dynamic armour.

**Weapons System Fundamentals: Analysis of weapons** - United States. Naval Ordnance Systems Command 1960

Measurement of Shaped Charge Penetration Rates - Timothy A. Rau 1991

Explosive Effects and Applications - Jonas A. Zukas 2013-12-01

This is a broad-based text on the fundamentals of explosive behavior and the application of explosives in civil engineering, industrial

processes, aerospace applications, and military uses.

**Balanchine the Teacher** - Barbara Walczak 2008

This work is a technical explanation of the stylistic approach that George Balanchine taught in New York City between 1940 and 1960, as recorded by two prominent dancers who studied with him at the time.

**Military Metallurgy** - Alistair Doig 2020-11-25

This book gives a broad based view of metals in military service, covering several examples and rationales. It is useful for the militarist and for the metallurgist or materials scientist. The content of the book is based on course notes compiled for undergraduate and post-graduate students.

**Fundamentals of Shaped Charges** - 1990

**Computational Science and Its Applications**

- **ICCSA 2004** - Antonio Laganà 2004-05-21

The natural mission of Computational Science is to tackle all sorts of human problems and to work

out intelligent automata aimed at alleviating the burden of working out suitable tools for solving complex problems. For this reason Computational Science, though originating from the need to solve the most challenging problems in science and engineering (computational science is the key player in the fight to gain fundamental advances in astronomy, biology, chemistry, environmental science, physics and several other scientific and engineering disciplines) is increasingly turning its attention to all fields of human activity. In all activities, in fact, intensive computation, information handling, knowledge synthesis, the use of ad-hoc devices, etc. increasingly need to be exploited and coordinated regardless of the location of both the users and the (various and heterogeneous) computing platforms. As a result the key to understanding the explosive growth of this discipline lies in two adjectives that more and more appropriately refer to Computational Science and its applications: interoperable and

ubiquitous. Numerous examples of ubiquitous and interoperable tools and applications are given in the present four LNCS volumes containing the contributions delivered at the 2004 International Conference on Computational Science and its Applications (ICCSA 2004) held in Assisi, Italy, May 14-17, 2004.

Ballistics - Donald E. Carlucci 2013-08-26  
Providing new chapters, homework problems, case studies, figures, and examples, Ballistics: Theory and Design of Guns and Ammunition, Second Edition encourages superior design and innovative applications in the field of ballistics. It examines the analytical and computational tools used to predict a weapon's behavior in terms of pressure, stress, and velocity, demonstrating their applications in ammunition and weapons design. What's New in the Second Edition: Includes computer examples in Mathcad (available on the CRC website) Adds a section of color plates, to better help readers visualize the physical concepts of ballistics Contains sections



on modern explosives equations of state for detonation physics modeling and on probability of hit Provides a solutions manual for those teaching college and training courses This book covers exterior ballistics, exploring the physics behind trajectories, including linear and nonlinear aeroballistics, and focuses on the effects of projective impact, including details on shock physics, shaped charges, penetration, fragmentation, and wound ballistics. Reviews and integrates the fundamental science and engineering concepts involved in guns and ammunition Uses straightforward, easy-to-read style, and careful development of complex topics Shares insights rooted in the experience of renowned experts, many associated with the National Defense Industrial Association (NDIA) and International Ballistics Society The field of ballistics comprises three main areas of specialization: interior, exterior, and terminal ballistics. This book explains all three areas, offering a seamless presentation of the complex

phenomena that occur during the launch, flight, and impact of a projectile.

### **The Shock and Vibration Digest - 1990**

*Damaging Effects of Weapons and Ammunition - Igor A. Balagansky 2022-05-03*

Comprehensive coverage of weapon damage effects on a variety of objects Damaging Effects of Weapons and Ammunition delivers a thorough exploration of a range of issues related to the effects of ammunition and weapons. The book includes coverage of the basic concepts of the theory of efficiency and the physical foundations of the functional and damaging effects of fragments, shaped charges, high-explosive and penetrating weapons. The author discusses the calculation formulas used to evaluation the parameters of damage fields and their interaction with various objects. Additionally, the book expands on the damage criteria of weapons, the characteristics of the vulnerability of objects with respect to a variety of damaging factors,

dependencies for assessing safe distances, and the resistance of various structures to the effects of explosion and impact. *Damaging Effects of Weapons and Ammunition* also offers: Detailed calculation methods indicating areas of application and the necessary units of used quantities Extensive examples of classic designs of ammunition from around the world Discussions of the characterization of various types of ammunition, including high-explosive, fragment, penetrative, and shaped charges A chapter on the numerical simulation of high-speed processes Perfect for technical specialists working in the fields of explosion safety and explosives, *Damaging Effects of Weapons and Ammunition* also belongs in the libraries of researchers and students studying explosion phenomena, explosive technologies, explosion safety, and materials science.

**Explosion Systems with Inert High-Modulus Components** - Igor A. Balagansky 2019-06-12

Describes in one volume the data received during

experiments on detonation in high explosive charges This book brings together, in one volume, information normally covered in a series of journal articles on high explosive detonation tests, so that developers can create new explosive technologies. It focuses on the charges that contain inert elements made of materials in which a sound velocity is significantly higher than a detonation velocity. It also summarizes the results of experimental, numerical, and theoretical investigations of explosion systems, which contain high modulus ceramic components. The phenomena occurring in such systems are described in detail: desensitization of high explosives, nonstationary detonation processes, energy focusing, and Mach stems formation. Formation of hypersonic flows of ceramic particles arising due to explosive collapse of ceramic tubes is another example of the issues discussed. *Explosion Systems with Inert High Modulus Components: Increasing the Efficiency of Blast Technologies and Their*

Applications also looks at the design of explosion protective structures based on high modulus ceramic materials. The structural transformations, caused in metallic materials by the energy focusing, or by the impact of hypersonic ceramic jets are also discussed. These transformations include, but not limited to adiabatic shear banding, phase transformations, mechanical twinning, melting, boiling, and even evaporation of the impacted substrates. Specifically discusses in one volume the explosions involved with inert high modulus components normally scattered over numerous journal articles Covers methods to increase energy output of a weak explosive by encasing it in a higher explosive Discusses the specifics of explosive systems containing high modulus inert elements Details the process of detonation and related phenomena, as well as the design of novel highly performant explosive systems Describes the transformation in materials impacted due to explosion in such systems

Explosion Systems with Inert High Modulus Components will be of great interest to specialists working in fields of energy of the explosion and explosion safety as well as university staff, students, and postgraduate students studying explosion phenomena, explosive technologies, explosion safety, and materials science.

### **Explosion Shock Waves and High Strain Rate Phenomena** - K. Hokamoto 2019-08-20

The book presents the papers presented at the 6th international conference on Explosion, Shock Wave and High Strain-Rate Phenomena (ESHP). Topics covered include: Advanced Manufacturing under Impact/Shock Loading, Detonation of High Pressure Flammable Gas in Closed Spaces, High Strain-Rate Behaviour of Auxetic Cellular Structures, Underwater Shock Waves Generation, Magnetic Pressure Welding of Aluminum Sheets, Shock Synthesis of Zirconium Oxides, Impact Joining of Dissimilar Metals, High-Speed Oblique Collision of Metals, Dynamic Behavior of

Dislocation Wall Structures, Tensile Strength of Rock at High Strain Rates, Fiber Reinforced Mortar, Impact Analysis of Carbon Fiber Reinforced Polymer, Explosive Welding , Underwater Explosive Welding , Making Ultrafine Explosives, Aluminum-Steel Explosive Cladding, Explosively Cladded Aluminum Hybrid Composites, Explosive Clads with Interlayers.

**BALLISTICS 2016** - Clive Woodley 2016-05-22  
Presents high-level research on various caliber guns, cannon, mortars, drones, warheads, shells, bullets, drills and other launchers and penetrants, as well as their impact effects on natural and designed materials, including large-scale targets and body armors Provides new modeling and test data on projectile design and guidance, propellants, charges and explosives for military, aerospace and civil engineering applications Over 250 presentations in two printed volumes, plus searchable CD This book makes available original ballistics technology from around the world on a wide variety of

weapons and their effects, including the design and trajectory/stability control of dozens of projectiles ranging from shells to missiles. The book's authors discuss the efficacy and development of propellants, munitions, and igniters and offer new approaches for modeling and testing. Also investigated in Volume 1 are shielding and protection strategies for individual persons and other targets. Volume 2 offers research on the mechanical behavior of multiple types of explosives, as well as impact and penetration data from projectile effects on surfaces ranging from natural phenomena such as water and soils to metallic plating and material-engineered armors. Papers in these volumes were presented at a conference organized by the National Defense Industrial Association (NDIA) with the International Ballistics Society.

*Megagauss Magnetic Field Generation, Its Application to Science and Ultra-high Pulsed-power Technology* - Hans J. Schneider-Muntau

2004

The generation of megagauss fields for science and technology is an exciting area at the extremes of parameter space, involving the application and controlled handling of extremely high power and energy densities in small volumes and on short time scales. New physical phenomena, technological challenges, and the selection and development of materials, together create a unique potential and synergy resulting in fascinating discoveries and achievements. This book is a collection of the contributions of an international conference, which assembled the leading scientists and engineers worldwide working on the generation and use of the strongest magnetic fields possible. Other research activities include generators that employ explosives to create ultra-high pulsed power for different applications, such as megavolt or radiation sources. Additional topics are the generation of plasmas and magnetized plasmas for fusion, imploding liners, rail guns,

etc.

The Shock and Vibration Digest - 1986

**An Optimization Study of an Explosive-driven Pile** - Jacob Savitt 1966

The propulsion of metals by the detonation of explosives in direct contact with them and propulsion effectiveness of various explosives for such purposes was studied. The results of these studies were applied to the design and evaluation of explosives systems for pile driving. It was determined that piles with external grooves along their entire lengths which are driven by the detonation of high explosives upon the lips of these grooves are not as effectively propelled as those which are driven by explosive 'hammerheads' on top of the piles. The results indicate that long, heavy-walled steel piles may successfully be driven into ordinary and frozen ground by the appropriate design and use of such explosive hammerhead systems. (Author).

**Advanced Microwave and Millimeter Wave**

**Technologies** - Moumita Mukherjee 2010-03-01  
This book is planned to publish with an objective to provide a state-of-the-art reference book in the areas of advanced microwave, MM-Wave and THz devices, antennas and system technologies for microwave communication engineers, Scientists and post-graduate students of electrical and electronics engineering, applied physicists. This reference book is a collection of 30 Chapters characterized in 3 parts: Advanced Microwave and MM-wave devices, integrated microwave and MM-wave circuits and Antennas and advanced microwave computer techniques, focusing on simulation, theories and applications. This book provides a comprehensive overview of the components and devices used in microwave and MM-Wave circuits, including microwave transmission lines, resonators, filters, ferrite devices, solid state devices, transistor oscillators and amplifiers, directional couplers, microstripeline components, microwave detectors, mixers, converters and harmonic

generators, and microwave solid-state switches, phase shifters and attenuators. Several applications area also discusses here, like consumer, industrial, biomedical, and chemical applications of microwave technology. It also covers microwave instrumentation and measurement, thermodynamics, and applications in navigation and radio communication.

Fundamentals of Shaped Charges - Emerson M. Pugh 1960

The volume and shape of craters produced in lead by the impact of steel pellets at 3/km/sec have been studied as functions of the angle of incidence for angles up to 70DG from the normal. It is found that crater volume is linear in the cosine of the angle of incidence and that it is directly proportional to the kinetic energy of the pellet for a given angle of incidence.

Consideration of energy and momentum conversation leads to a plausible interpretation of this behavior. It is also found that the relation between the depth and the (transverse) diameter

is consistent with the concept of a radial "afterflow" superimposed on a primary penetration which obeys the density laws of penetration by fluid jets.

**RFID Handbook** - Klaus Finkenzeller 2010-11-04

This is the third revised edition of the established and trusted RFID Handbook; the most comprehensive introduction to radio frequency identification (RFID) available. This essential new edition contains information on electronic product code (EPC) and the EPC global network, and explains near-field communication (NFC) in depth. It includes revisions on chapters devoted to the physical principles of RFID systems and microprocessors, and supplies up-to-date details on relevant standards and regulations. Taking into account critical modern concerns, this handbook provides the latest information on: the use of RFID in ticketing and electronic passports; the security of RFID systems, explaining attacks on RFID systems and other security matters, such as transponder emulation and cloning, defence

using cryptographic methods, and electronic article surveillance; frequency ranges and radio licensing regulations. The text explores schematic circuits of simple transponders and readers, and includes new material on active and passive transponders, ISO/IEC 18000 family, ISO/IEC 15691 and 15692. It also describes the technical limits of RFID systems. A unique resource offering a complete overview of the large and varied world of RFID, Klaus Finkenzeller's volume is useful for end-users of the technology as well as practitioners in auto ID and IT designers of RFID products. Computer and electronics engineers in security system development, microchip designers, and materials handling specialists benefit from this book, as do automation, industrial and transport engineers. Clear and thorough explanations also make this an excellent introduction to the topic for graduate level students in electronics and industrial engineering design. Klaus Finkenzeller was awarded the Fraunhofer-Smart Card Prize

2008 for the second edition of this publication, which was celebrated for being an outstanding contribution to the smart card field.

**Audubon Birdhouse Book, Revised and Updated** - Margaret Barker 2021-06-15

The Audubon Birdhouse Book is the most authoritative book available for creating safe, sturdy, and easy-to-build homes for many of North America's favorite birds. This updated second edition includes important new and timely topics including impacts of climate change on birds, nestbox monitoring for citizen science, native plants for native birds, and how birders can help birds. A visit to almost any home or garden center presents birders with numerous cute and colorful contraptions that are sold as bird homes. But the fact is, many of these products provide anything but a safe refuge for your feathered friends. Produced in association with the National Audubon Society, Audubon Birdhouse Book explains how to build and place functional DIY bird homes that are safe and

appropriate for more than 20 classic North American species, from wrens to raptors. Each of the easy-to-build boxes and shelves within is accompanied by cut lists, specially created line diagrams, and step-by-step photography, making the projects accessible to those with even the most rudimentary woodworking skills. In addition, this practical and beautifully presented guide is packed with color photography and information about the bird species covered: Wrens, Warblers, Bluebirds, Flycatchers, Swallows, Titmice, Owls, Flickers, Kestrels, Chickadees, Ducks, Mergansers, Swallows, Doves, Swallows, Robins, Finches, Phoebes, Loons, Swifts, Herons, and Ospreys. Detailed information will help you properly place and maintain the homes to attract birds. And because these projects are the product of years of experience and field-testing, you can be sure you're getting the best advice regarding proper design, safe construction materials, and correct home placement to mitigate exposure to elements, pests, and



predators. Finally, beyond the birdhouses, you'll find out how you can contribute to the larger birding community and even enhance your birding experience.

**Fundamentals of Shaped Charges** - William P. Walters 1989

An introduction to the art and science of developing shaped charges. Presents the history of shaped charges, the principles governing their design, and a variety of example applications. Includes discussion of Gurney and Taylor methods, jet formation, the visco-plastic model, jet penetration, fabrication, computational aspects, and how to design shaped charges for different applications. Annotation copyrighted by Book News, Inc., Portland, OR

[Technical Abstract Bulletin](#) -

**Jewelry** - Tim McCreight 1997-09-15

In logical progression, Jewelry: Fundamentals of Metalsmithing examines the basic techniques of this ancient and accessible craft: fabricating,

surface treatments, joining, finishing, stone setting, chain making, mechanisms, and casting. It is illustrated throughout with clear demonstration photos, Mr. McCreight's beautifully rendered drawings, and examples of exceptional contemporary jewelry. This relaxed yet thorough introduction to the skills of metalworking is a fully revised, expanded and updated edition of Tim McCreight's popular guide for novice metalworkers. As both a fresh presentation of fundamental techniques and a portfolio of the finest contemporary design, Jewelry: Fundamentals of Metalsmithing is an instant classic in its own right.

**Blast and Ballistic Loading of Structures** - John Hetherington 2014-04-21

This book brings together, in a concise format, the key elements of the loads produced from explosive sources, and how they interact with structures. Explosive sources include gas, high explosives, dust and nuclear materials. It presents quantitative information and design

methods in a useable form without recourse to extensive mathematical analysis. The authors, Peter Smith and John Hetherington, are staff members at the Royal Military College of Science in Shrivenham and have been instrumental in establishing an active team studying the response of structures to blast and ballistic loading.

**Fundamentals of Electric Propulsion** - Dan M. Goebel 2008-12-22

Throughout most of the twentieth century, electric propulsion was considered the technology of the future. Now, the future has arrived. This important new book explains the fundamentals of electric propulsion for spacecraft and describes in detail the physics and characteristics of the two major electric thrusters in use today, ion and Hall thrusters. The authors provide an introduction to plasma physics in order to allow readers to understand the models and derivations used in determining electric thruster performance. They then go on to present

detailed explanations of: Thruster principles Ion thruster plasma generators and accelerator grids Hollow cathodes Hall thrusters Ion and Hall thruster plumes Flight ion and Hall thrusters Based largely on research and development performed at the Jet Propulsion Laboratory (JPL) and complemented with scores of tables, figures, homework problems, and references, **Fundamentals of Electric Propulsion: Ion and Hall Thrusters** is an indispensable textbook for advanced undergraduate and graduate students who are preparing to enter the aerospace industry. It also serves as an equally valuable resource for professional engineers already at work in the field.

**Advances in Forming, Machining and Automation** - M. S. Shunmugam 2019-11-23

This volume comprises select proceedings of the 7th International and 28th All India Manufacturing Technology, Design and Research conference 2018 (AIMTDR 2018). The papers in this volume focus on forming and machining, and

discuss both conventional technologies and the latest developments and innovations, including both experimental studies and simulations; while those on automation present the latest research on hardware as well as software aspects. This volume will be of interest to researchers, and practicing engineers alike.

### **Artificial Intelligence and Machine Learning Fundamentals** - Zsolt Nagy 2018-12-12

Create AI applications in Python and lay the foundations for your career in data science  
Key Features  
Practical examples that explain key machine learning algorithms  
Explore neural networks in detail with interesting examples  
Master core AI concepts with engaging activities  
Book Description  
Machine learning and neural networks are pillars on which you can build intelligent applications. Artificial Intelligence and Machine Learning Fundamentals begins by introducing you to Python and discussing AI search algorithms. You will cover in-depth mathematical topics, such as regression and

classification, illustrated by Python examples. As you make your way through the book, you will progress to advanced AI techniques and concepts, and work on real-life datasets to form decision trees and clusters. You will be introduced to neural networks, a powerful tool based on Moore's law. By the end of this book, you will be confident when it comes to building your own AI applications with your newly acquired skills! What you will learn  
Understand the importance, principles, and fields of AI  
Implement basic artificial intelligence concepts with Python  
Apply regression and classification concepts to real-world problems  
Perform predictive analysis using decision trees and random forests  
Carry out clustering using the k-means and mean shift algorithms  
Understand the fundamentals of deep learning via practical examples  
Who this book is for  
Artificial Intelligence and Machine Learning Fundamentals is for software developers and data scientists who want to enrich their projects with machine

learning. You do not need any prior experience in AI. However, it's recommended that you have knowledge of high school-level mathematics and at least one programming language (preferably Python).

**Fundamentals of Shaped Charges** - William P. Walters 1989

An introduction to the art and science of developing shaped charges. Presents the history

of shaped charges, the principles governing their design, and a variety of example applications. Includes discussion of Gurney and Taylor methods, jet formation, the visco-plastic model, jet penetration, fabrication, computational aspects, and how to design shaped charges for different applications. Annotation copyrighted by Book News, Inc., Portland, OR