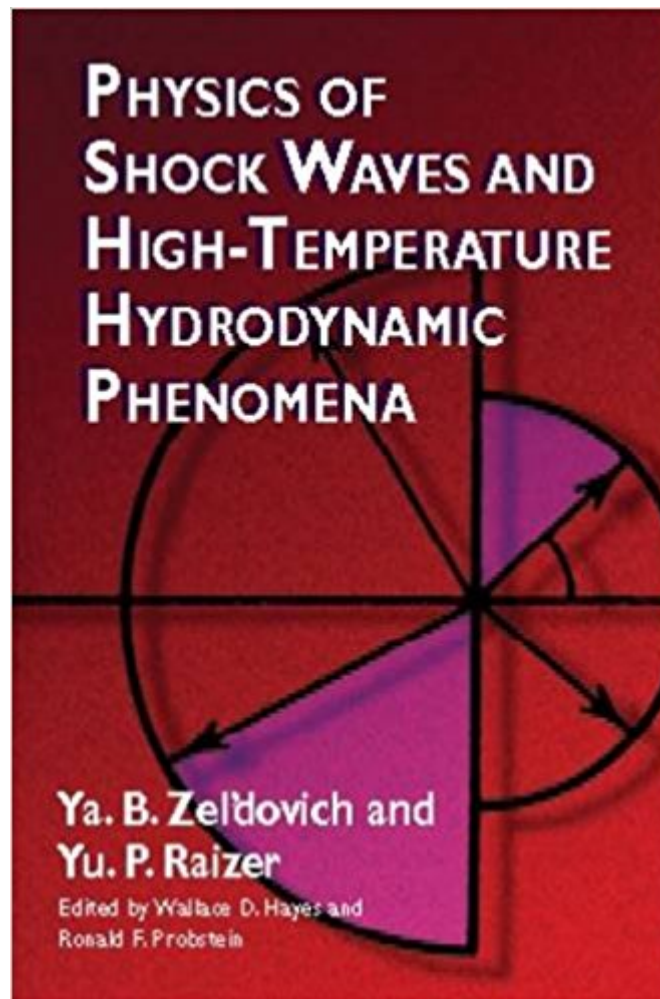


The book was found

# Physics Of Shock Waves And High-Temperature Hydrodynamic Phenomena (Dover Books On Physics)



## Synopsis

High temperatures elicit a variety of reactions in gases, including increased molecular vibrations, dissociation, chemical reactions, ionization, and radiation of light. In addition to affecting the motion of the gas, these processes can lead to changes of composition and electrical properties, as well as optical phenomena. These and other processes of extreme conditions — such as occur in explosions, in supersonic flight, in very strong electrical discharges, and in other cases — are the focus of this outstanding text by two leading physicists of the former Soviet Union. The authors deal thoroughly with all the essential physical influences on the dynamics and thermodynamics of continuous media, weaving together material from such disciplines as gas dynamics, shock-wave theory, thermodynamics and statistical physics, molecular physics, spectroscopy, radiation theory, astrophysics, solid-state physics, and other fields. This volume, uniquely comprehensive in the field of high-temperature gas physics and gas dynamics, was edited and annotated by Wallace D. Hayes and Ronald F. Probstein, leading authorities on the flow of gases at very high speeds. It is exceptionally well suited to the needs of graduate students in physics, as well as professors, engineers, and researchers.

## Book Information

Series: Dover Books on Physics

Paperback: 944 pages

Publisher: Dover Publications; annotated edition edition (March 31, 2002)

Language: English

ISBN-10: 0486420027

ISBN-13: 978-0486420028

Product Dimensions: 6.3 x 1.8 x 9.2 inches

Shipping Weight: 2.7 pounds (View shipping rates and policies)

Average Customer Review: 4.8 out of 5 stars — See all reviews (11 customer reviews)

Best Sellers Rank: #596,126 in Books (See Top 100 in Books) #16 in Books > Engineering & Transportation > Engineering > Aerospace > Gas Dynamics #108 in Books > Science & Math > Physics > Waves & Wave Mechanics #1633 in Books > Textbooks > Science & Mathematics > Physics

## Customer Reviews

The republication by Dover Publications of this masterwork by Ya. B. Zel'dovich and Yu. P. Raizer will be welcomed by all workers dealing with high-temperature (radiating) flows. This book is a

virtual "Bible" for studies of shocks and radiation fronts in high speed aeronautics, astronautics (re-entry), astrophysics, fireballs, shock tubes, and very intense explosions. Zel'dovich was a physicist of extraordinary breadth of interests. The style of this book is to give heuristic explanations followed by rigorous analysis. It is insightful for both beginning students and researchers in the field. This book is an ABSOLUTE MUST for anyone working on the subjects listed above. The Dover edition binds both original volumes as one, and is based on the very scarce second printing, in which most of the typographical errors in the first printing were corrected. All other errors noted over the years since the original edition went out of print have been collected and corrected in this version, which should be virtually error free. I URGE anyone working in astrophysics and high-temperature flow physics to buy, read, enjoy, and be enlightened by this masterpiece.

This majisterial work by the famous Russian physicist/astrophysicist Yakov B. Zeldovich is the first and last book to refer to when studying the hydrodynamics of compressible fluids at high temperatures. The author's primary goal is to describe (as well as possible in a roughly 1000 page text) the physics, chemistry, and radiation diagnostics (i.e. radiative transfer) of a 20 kt thermonuclear explosion in the atmosphere. This book will be of use to a wide range of physicists and astrophysicists in other areas of research as well, though. The book begins with a (brief) discussion of the basics of the physics of shocks (and the hydrodynamics/thermodynamics of supersonic flow in general). More detailed topics include a detailed discussion of the ionization of the air (i.e. a change of adiabatic index from  $7/5$  to  $5/3$ ), the broad band spectrum of the explosion, and many others. Any absolute must have for any scientist studying compressible/supersonic flows.

I've wasted many credit hours taking physics courses all the way up through grad school and never learned a damned thing! This book reignited my interest in physics. It explains how to think about the physics and what things mean as opposed to the typical nonsense of here's the equation and the solution (solution obtained by some absurd change of variable or transformation that you will never be able to guess if you lived a  $1.0E12$  years!) Gives great insight on physical modeling. This is one of few physics books I cannot live without. This is one of 3 books that allowed me to get a Ph.D! However, it is not for beginners. You must have some experience in fluid mechanics and quantum mechanics in order to appreciate the material. The book is not going to tell you how to solve problems, but focus on the meaning of results.

You only have to read a couple of chapters from this book if you are a beginner in shock wave

science to gain a basic understanding. This is an excellent book together with Courant's book *Supersonic Flow and Shock Waves (Applied Mathematical Sciences)* (v. 21)

The author is the "father" of high temperature, high pressure physics. While not discussed directly, clearly this book is a data dump of the knowledge in the USSR developed during their nuclear weapons programs..... many of the physicist that developed the Soviet nuclear capabilities were Jewish and this book should be a tribute to their contribution (in particular in light of Stalin's purge of the Jews from all high positions).

This book is a classic. I have used it for years. It originally came in two volumes. Someone borrowed my old Volume I and failed to return it. I now have both volumes in one convenient package.

[Download to continue reading...](#)

Physics of Shock Waves and High-Temperature Hydrodynamic Phenomena (Dover Books on Physics) The Wave Watcher's Companion: From Ocean Waves to Light Waves via Shock Waves, Stadium Waves, and All the Rest of Life's Undulations Mitigation of Hydrodynamic Resistance: Methods to Reduce Hydrodynamic Drag Explosive Effects and Applications (Shock Wave and High Pressure Phenomena) Creep of Crystals: High-Temperature Deformation Processes in Metals, Ceramics and Minerals (Cambridge Earth Science Series) High-Temperature Superconductivity High Blood Pressure Cure: How To Lower Blood Pressure Naturally in 30 Days (Alternative Medicine, Natural Cures, Natural Remedies, High Blood Pressure ... Cures for High Blood Pressure, High BI) The Foodsaver Sous Vide Cookbook: 101 Delicious Recipes With Instructions For Perfect Low-Temperature Immersion Cooking! (Sous Vide Gourmet Slow Cooking) Sproutman's Kitchen Garden Cookbook: 250 flourless, Dairyless, Low Temperature, Low Fat, Low Salt, Living Food Vegetarian Recipes Effect of Chloride & Temperature on Rusting of Steel Reinforced Concrete 2nd Ed Physics for Scientists and Engineers, Vol. 1, 6th: Mechanics, Oscillations and Waves, Thermodynamics, Jokes For Kids - Joke Books : Funny Books : Kids Books : Books for kids age 9 12 : Best Jokes 2016 (kids books, jokes for kids, books for kids 9-12, ... funny jokes, funny jokes for kids) (Volume 1) Vibrations and Waves (Manchester Physics Series) Six Ideas That Shaped Physics: Unit Q - Particles Behaves Like Waves Neutrons, Nuclei and Matter: An Exploration of the Physics of Slow Neutrons (Dover Books on Physics) Electronic Structure and the Properties of Solids: The Physics of the Chemical Bond (Dover Books on Physics) 500 High Fiber Recipes: Fight Diabetes, High Cholesterol, High Blood Pressure, and Irritable Bowel Syndrome with Delicious

Meals That Fill You Up and Help You Shed Pounds! Foods High in Fiber Cookbook: List of High Fiber Foods for a Healthy Lifestyle - Recipes for High Fiber Foods Asia Shock: Horror and Dark Cinema from Japan, Korea, Hong Kong, and Thailand Shell Shock Cinema: Weimar Culture and the Wounds of War

[Dmca](#)