

PHYSICS OF SHOCK WAVES AND HIGH-TEMPERATURE HYDRODYNAMIC PHENOMENA

Ya. B. Zel'dovich and Yu. P. Raizer

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. Probst, 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.

Dover unabridged republication in one volume of the English translation originally published in two volumes by Academic Press Inc., New York, 1966–1967.

\$44.95 USA

PRINTED IN THE USA

ISBN-13: 978-0-486-42002-8

ISBN-10: 0-486-42002-7



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