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Rarefied Gas Dynamics From Basic

The aim of this book is to present the concepts, methods and applications of kinetic theory to rarefied gas dynamics. After introducing the basic tools, problems in plane geometry are treated using approximation techniques (perturbation and numerical methods). These same techniques are later used to deal with two- and three-dimensional problems.

Rarefied Gas Dynamics: From Basic Concepts To Actual ...

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However, for engineers and scientists with a moderate level of prior expertise in the field, *Rarefied Gas Dynamics: From Basic Concepts to Actual Calculations*, is a great comprehensive reference that is certainly worth the low cost.

Rarefied Gas Dynamics: From Basic Concepts to Actual ...

Rarefied Gas Dynamics is a collection of selected papers presented at the Eighth International Symposium on Rarefied Gas Dynamics, held at Stanford University in July 1972. The book is a record of the significant advances in the broad field of Rarefied Gas Dynamics that are considered to be of general and continuing interest.

Rarefied Gas Dynamics | ScienceDirect

Basic concepts of rarefied gas dynamics are given in a concise form. Some problems of rarefied gas flows are considered, namely, calculations of velocity slip and temperature jump coefficients, gas flow through a tube due to pressure and temperature gradients, and gas flow through a thin orifice.

Rarefied gas dynamics and its applications to vacuum ...

Abstract This work presents the concepts, methods and applications of kinetic theory to rarefied gas dynamics. After introducing the basic tools, Carlo Cercignani treats problems in plane geometry using all the approximation techniques. He later uses these same techniques to deal with two- and three-dimensional problems.

Rarefied Gas Dynamics - NASA/ADS

Introduction. This book elucidates the methods of molecular gas dynamics or rarefied gas dynamics which treat the problems of gas flows when the discrete molecular effects of the gas prevail under the circumstances of low density, the emphases being stressed on the basis of the methods, the direct simulation Monte Carlo method applied to the simulation of non-equilibrium effects and the frontier subjects related to low speed microscale

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rarefied gas flows.

Rarefied Gas Dynamics | SpringerLink

Rarefied gas dynamics (RGD) is a multi-disciplinary field encompassing molecular physics of gases and thermodynamics, mathematics, computational simulation, and application of underpinning technology in various sectors. RGD32 will serve as a global platform to bring together the best of current work on diverse and emerging subjects in RGD like kinetic theory for complex systems, mesoscale and multiscale modeling, hypersonic glide vehicles, shale gases, and vapor deposition processes.

RGD32

Only in the low-density realm of rarefied gas dynamics does the motion of individual molecules become important. A related assumption is the no-slip condition where the flow velocity at a solid surface is presumed equal to the velocity of the surface itself, which is a direct consequence of assuming continuum flow.

Compressible flow - Wikipedia

Rarefied gas dynamics arose originally as the study of gas flows where the average distance between two subsequent collisions of a molecule (the so-called mean free path) is not negligible in comparison with the flow characteristic spatial dimension.

History - Rarefied Gas Dynamics

The symposia are a forum for the presentation of recent advances in the field of rarefied gas dynamics. Research presented encompasses applications of space, materials, and propulsion, as well as the basic physics of molecular interactions, gas surface interactions, kinetic theory, astronomical observations, gas transport, multi-phase flows, combustion, non-equilibrium hypersonic gas dynamics, and plasma processing.

About - Rarefied Gas Dynamics

Rarefied Gas Dynamics (2000) (en) (320s) Carlo Cercignani. This work presents the concepts, methods and applications of kinetic theory to rarefied gas dynamics. After introducing the basic

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tools, Carlo Cercignani treats problems in plane geometry using all the approximation techniques. He later uses these same techniques to deal with two- and three-dimensional problems.

Rarefied Gas Dynamics (2000)(en)(320s) | Carlo Cercignani ...

The book assembles many current topics in theoretical and numerical gas dynamics that, until now, were only accessible from the original journal articles. It also has a clear, detailed description of Direct Simulation Monte Carlo (DSMC), which is the dominant numerical method for the simulation of rarefied gas flows.

Gas Dynamics: Amazon.com

Rarefied gas dynamics : from basic concepts to actual calculations. [Carlo Cercignani] -- "The aim of this book is to present the concepts, methods, and applications of kinetic theory to rarefied gas dynamics. After introducing the basic tools, problems in plane geometry are treated using... Your Web browser is not enabled for JavaScript.

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This revised and updated sixth edition continues to provide the most accessible and readable approach to the study of all the vital topics and issues associated with gas dynamic processes. With a strong emphasis on the basic concepts and problem-solving skills, this text is suitable for a course on Gas Dynamics/Compressible Flows/High-speed Aerodynamics at both undergraduate and postgraduate ...

GAS DYNAMICS - RATHAKRISHNAN, E. - Google Books

2) Identify gas flow regimes (continuum, slip, transitional, free molecular) and applicable governing equations. 3) Apply equilibrium fluxes to solve basic free-molecular flow problems. 4) Setup and conduct direct simulation Monte Carlo modeling for rarefied flow problems.

Molecular Gas Dynamics Course | Engineering Courses ...

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Gas kinetics is a science in the branch of fluid dynamics, concerned with the study of motion of gases and its effects on physical systems. Based on the principles of fluid mechanics and thermodynamics, gas dynamics arises from the studies of gas flows in transonic and supersonic flights. To distinguish itself from other sciences in fluid dynamics, the studies in gas dynamics are often defined ...

Gas kinetics - Wikipedia

This work presents the concepts, methods and applications of kinetic theory to rarefied gas dynamics. After introducing the basic tools, Carlo Cercignani treats problems in plane geometry using all the approximation techniques. He later uses these same techniques to deal with two- and three-dimensional problems.

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