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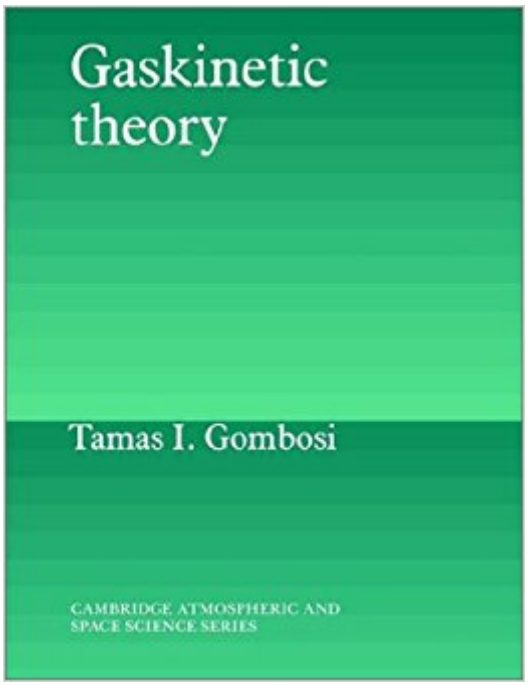
Gaskinetic Theory (Cambridge Atmospheric And Space Science Series)



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Synopsis

Gaskinetic Theory is an introductory text on the molecular theory of gases and on modern transport theory suitable for upper division undergraduates in physics and first year graduate students in aerospace engineering, upper atmospheric science and space research. The first part introduces basic concepts, including the distribution function, classical theory of specific heats, binary collisions, mean free path, and reaction rates. Transport theory is used to express coefficients such as viscosity and heat conductivity in terms of molecular properties. The second part of the book covers advanced transport theory. Generalized transport equations are derived from the Boltzmann equation. The Chapman-Enskog and the Grad methods are discussed to obtain higher order transport equations for low density gases. The aerodynamics of solid bodies is explored and the book concludes with the kinetic description of shock waves.

Book Information

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Customer Reviews

"This is a well-organized, clearly-written, upper-division undergraduate or beginning graduate level textbook. The material content, its organization, its concise but instructive mathematical developments, the care and attention given to physical principles, and its explicit guidance to other well-selected sources for supplemental information indicate that the book will also serve as a convenient research reference work....[T]he subject material content is remarkably comprehensive....I recommend Gaskinetic Theory both for individual acquisition and for academic and institutional library purchase." A.C. Buckingham, Applied Mechanics Review

This introduction to the molecular theory of gases and modern transport theory includes such basic concepts as distribution function, classical theory of specific heats, binary collisions, mean free path and reaction rates, as well as topics relevant to advanced transport theory.

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