



Kinetic Theory And Fluid Dynamics

Author :Yoshio Sone / **Category :**Science / **Total Pages :** 353 pages

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Summary : Free kinetic theory and fluid dynamics pdf download - this monograph is intended to provide a comprehensive description of the relation between kinetic theory and fluid dynamics for a time-independent behavior of a gas in a general domain a gas in a steady or time-independent state in a general domain is considered and its asymptotic behavior for small knudsen numbers is studied on the basis of kinetic theory fluid-dynamic-type equations and their associated boundary conditions together with their knudsen-layer corrections describing the asymptotic behavior of the gas for small knudsen numbers are presented in addition various interesting physical phenomena derived from the asymptotic theory are explained the background of the asymptotic studies is explained in chapter 1 according to which the fluid-dynamic-type equations that describe the behavior of a gas in the continuum limit are to be studied carefully their detailed studies depending on physical situations are treated in the following chapters what is striking is that the classical gas dynamic system is incomplete to describe the behavior of a gas in the continuum limit or in the limit that the mean free path of the gas molecules vanishes thanks to the asymptotic theory problems for a slightly rarefied gas can be treated with the same ease as the corresponding classical fluid-dynamic problems in a rarefied gas a temperature field is directly related to a gas flow and there are various interesting phenomena which cannot be found in a gas in the continuum limit

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