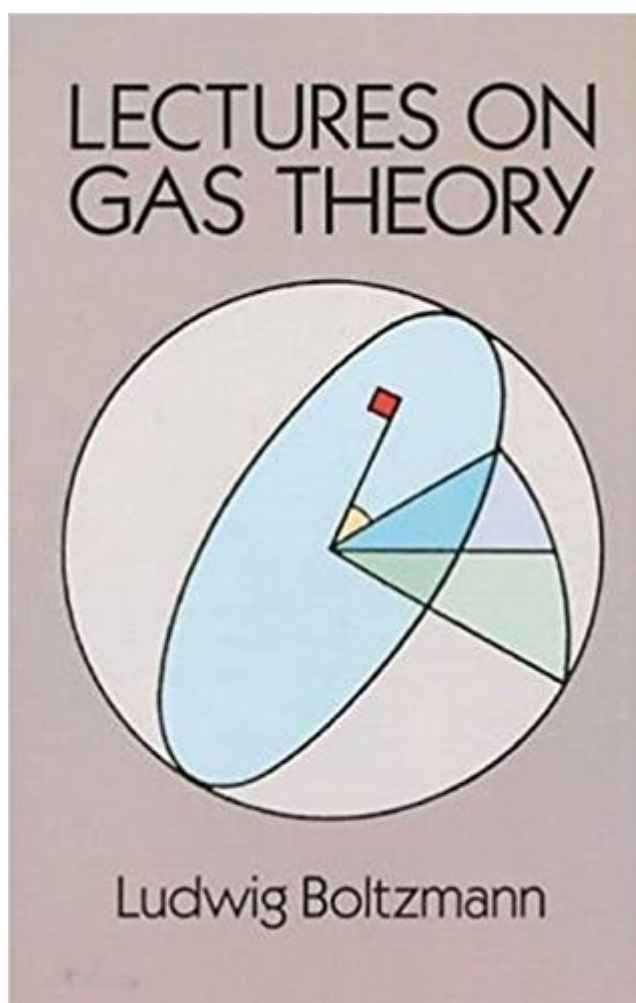


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Lectures On Gas Theory (Dover Books On Physics)



Synopsis

One of the great masterpieces of theoretical physics, this classic work contains a comprehensive exposition of the kinetic theory of gases that is still relevant today, nearly 100 years after its first publication. Although the modifications of quantum mechanics have rendered some parts of the work obsolete, many of the topics dealt with still yield to the classical-mechanics approach outlined by Boltzmann; moreover, a variety of problems in aerodynamics, nuclear reactors, and thermonuclear power generation are best solved by Boltzmann's famous transport equation. The work is divided into two parts: Part I deals with the theory of gases with monatomic particles, whose dimensions are negligible compared to the mean free path. Topics include molecules as elastic spheres and as centers of force, external forces and visible motions of the gas and the repelling force between molecules. Part II covers van der Waals' theory, the principles of general mechanics needed for a gas theory, gases with compound molecules, derivation of van der Waals' equation by means of the virial concept, theory of dissociation and supplements to the laws of thermal equilibrium in gases with compound molecules. Combining rigorous mathematical analysis with pragmatic treatment of physical and chemical applications, *Lectures on Gas Theory* was the standard work on kinetic theory in the first quarter of the 20th century. It remains "one of the greatest books in the history of exact sciences." — Mark Kac.

Book Information

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Customer Reviews

Ludwig Boltzmann pioneered the theory for statistical physics. So much so that his Boltzmann

equation defined the field. During his lifetime, he wrote many publications regarding his theory. Toward the end of his life, he wrote this book to bring everything together. The book does not represent a modern presentation of statistical physics, but rather insight into the mind and thinking of Ludwig Boltzmann as he developed the original theory. The translator's introduction gives a very good overview of the history of kinetic theory that preceded Boltzmann, and the schools of scientific thought that Boltzmann debated during his lifetime.

I must say I'm a beginner in statistical mechanics but I believe Boltzmann is really worth reading because he was one of the creators of statistical mechanics. One can learn a lot by reading the works of masters. His book is of course old fashioned 19th century book and his notations are not the kind of thing you can love, but I found his book readable and enjoyable. Boltzmann works out every theorem rigorously and explains every single points in detail. It might exhaust you but at the end you can see the picture. I definitely recommend Boltzmann to everyone. P.S I also recommend Ehrenfest's book as companion of Boltzmann.

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