

knowledge, it is the first English text that deals clearly and completely with the subject of terrestrial gravity. In view of the growing interest in the practical applications of the subject, the appearance of this book is particularly welcome.

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Joseph Gillis is a professor of applied mathematics at the Weizmann Institute of Science, Rehovoth, Israel.

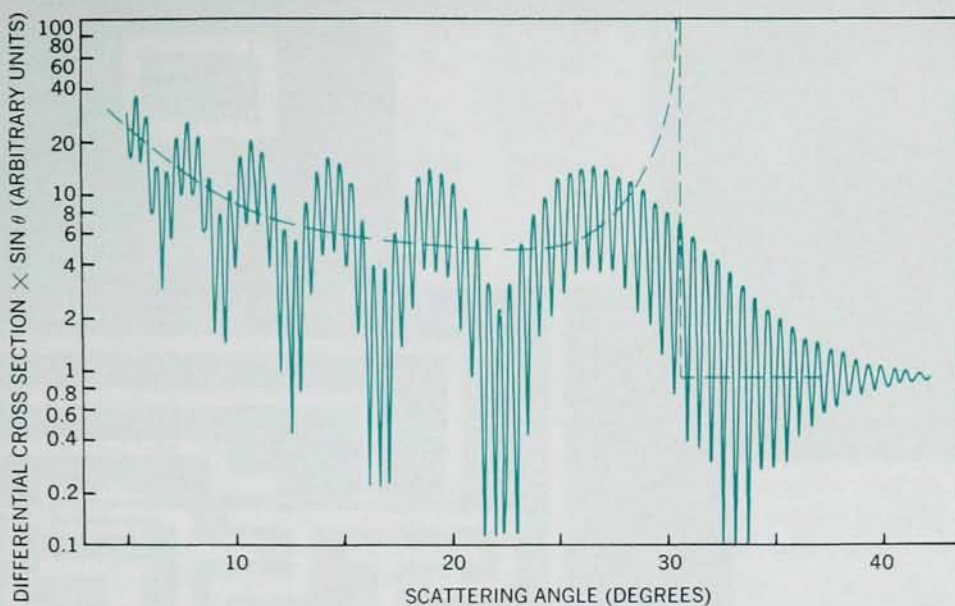
Techniques for collisionmen

METHODS OF EXPERIMENTAL PHYSICS, VOL. 7A: ATOMIC AND ELECTRON PHYSICS. Benjamin Bederson, Wade L. Fite, eds. 506 pp. Academic Press, New York, 1968. \$21.50

by JOHN B. HASTED

L. Marton, the editor in chief of this well known series, claims that the "mushrooming" of the atomic- and electron-physics text from two to four volumes is not his fault. Personally, I would have gone along with an even faster growth rate and tried to take some of the credit. Volume 7, Part A describes the crossed-beam and beam-gas techniques for elastic- and inelastic-collision study, whilst a further volume on collision processes in bulk matter, mostly plasma, is promised.

The subject lends itself to systematization; for example, one can enumerate the possible binary processes between photons, electrons, neutral atoms and molecules, positive ions, negative ions and excited species; one then searches for an expert in each of these processes and compels him to appease his conscience by writing a chapter. In many ways the variety of approach adopted by each expert is an attractive feature. Some authors prefer to go no further than to describe the actual techniques of beam production and detection, together with collision-chamber design—for example the excellent discussion of electron scattering by gases due to Chris E. Kuyatt. Others will question why the collision process is of interest in the first place—for instance the discussion by Hans Pauly and Peter Toennies of neutral-beam experiments at thermal energies is probably the outstanding article in the book, even though much of the material in it has appeared before. Again, other collision processes such as those of excited species with neutral atoms and mole-



CALCULATED DIFFERENTIAL SCATTERING cross section (weighted with $\sin \theta$) for a Lennard-Jones potential. The dashed curve shows the classical cross section for the same potential and energy. (From *Methods of Experimental Physics*, Vol. 7A.)

cules are unfortunately not included.

The contributors are ten Americans, four British, two Germans. The balance is not unsatisfactory, but I would have welcomed articles from the USSR and Holland. The days of "latitude effects" in collision cross sections are mercifully almost over. I don't suppose that more than one or two of the authors, if that many, would describe themselves as chemists. But this is a subject under extensive invasion from chemists, and one would like to see them represented; for example, photoelectron spectroscopy could have enjoyed a more generous discussion.

In general, this is a volume that is going to be of great value to the ever increasing tribe of "collisionmen," and the editors and contributors are to be congratulated.

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John Hasted, who is head of the physics department at Birkbeck College, University of London, was for 20 years a member of the atomic-collisions team of Sir Harrie Massey at University College, London, where Hasted studied both electron and heavy-particle collisions.

Light scattering

MOLECULAR SCATTERING OF LIGHT. By Immanuel L. Fabelinskii. (Trans. from Russian) 622 pp. Plenum Press, New York, 1968. \$32.00

by HOWARD B. LEVINE

The invention of the laser has opened the new field of nonlinear optics, and

in addition has renewed interest in linear light-scattering phenomena. It would be particularly convenient at this time to have on hand a comprehensive treatise in this field, which would review the existing literature and also provide a unified framework for understanding it. Immanuel L. Fabelinskii has been an active contributor to light-scattering research for many years, and I obtained the general impression from this book that he possesses the knowledge needed to provide the suggested treatise. This book represents the author's attempt to share his knowledge with other physicists.

The various sections of this book deal with Rayleigh and Mandel'shtam-Brillouin scattering from gases and condensed isotropic phases, the theory of the spectral shape of such scattering, experimental techniques, auxiliary measurement of macroscopic parameters (such as the adiabatic density dependence of the dielectric constant), depolarization of scattered light, scattering by glasses, the spectrum of the wing of the Rayleigh line, scattering by crystals and a number of other topics of linear scattering theory. The primary missing element is Raman scattering, but except for this deletion, the variety of subjects encompassed is large. The title states the approach to be molecular, but in fact the approach is probably better said to be hydrodynamic or thermodynamic or both, as the theories discussed for the most part are based upon empirical relaxation equations that utilize bulk properties such as sound velocity, vis-