Vest states that he has tried to make the book useful both to readers working in the area of holographic interferometry and to those from other disciplines who are interested in evaluating the potential applications of holographic interferometry. While specialists in the area will find this book an invaluable reference (almost 700 references are cited), the interested outsider may find the depth of the treatment in some areas and the accompanying mathematics to be somewhat overwhelming.

The book flows somewhat disjointedly at points, and perhaps a few more section divisions would have been in order. A case in point is the discussion on experimental procedures in the first chapter. In fact, if future editions are forthcoming, a separate chapter on experimental techniques should be considered.

The above are only minor criticisms of a very comprehensive reference work. The book is highly recommended and should provide a valuable addition to the reference library of any engineer or physicist working in the area of holographic interferometry.

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Introduction to the Theory of Thermal Neutron Scattering

G. L. Squires
260 pp. Cambridge U.P., New York, 1978. $39.50

Since the advent of intense sources of thermalized neutrons from reactors, thermal-neutron scattering has provided an invaluable tool for investigating the physical properties of condensed matter systems. One can use the neutron–nuclear interaction to obtain detailed microscopic information of the equilibrium positions of atoms and their time-dependent collective behavior. Similarly, the neutron–electron magnetic-dipole interaction can be used to investigate the complete magnetic structure and spin-dynamics of a system. Thermal neutron scattering therefore provides fundamental information about the properties of condensed matter which cannot be obtained by any other experimental technique. However, the versatility of the technique, which allows this richness of phenomena to be explored, also makes it a difficult subject to cover adequately in a text. Gordon Squires's *Introduction to the Theory of Thermal Neutron Scattering* presents a readable introduction to the traditional subjects of thermal neutron scattering, namely nuclear scattering from solids and liquids and the study of the magnetic structures and spin dynamics of magnetic materials.

The author states that the intended audience is the experimentalist in the field of thermal neutron scattering who wishes to see the theoretical concepts developed in a less than formal manner, but there often appears to be insufficient depth in the material for it to be generally useful to this group. To get actively involved in neutron scattering, the reader would be advised to consult the standard texts in the field, George Bacon's *Neutron Diffraction*, and Walter Marshall's and Stephen Lovesey's *The Theory of Thermal Neutron Scattering*. Both of these contain more comprehensive treatments of the material covered by Squires, and they also contain considerably more extensive references to the literature.

Squires's book appears more suited to the beginner in neutron scattering who needs an introduction to the subject without being inundated with the mathematical formalism and details, while still achieving a reasonable feel for the elegance of the theory and the power of the technique. The presentation is at an advanced undergraduate–first-year graduate level. The basic theory is presented and is accompanied by examples

and problems to elucidate the essential points, with many of the mathematical details being relegated to the appendices or left as exercises for the student. Summaries of some of the basic results of quantum mechanics and solid-state physics are also given in the appendices. This approach is especially helpful to the student. Unfortunately, the experimental examples chosen for illustration are sometimes outdated and not representative of present capabilities and techniques. For instance, to illustrate the measurement of phonon dispersion relations, the author discusses the time-of-flight technique, whereas this method has not generally been used for this purpose since shortly after Bertram N. Brockhouse developed the constant-**Q** triple-axis spectrometer in the late 1950's. Some of the newer fields and techniques in which newcomers might be especially interested, such as phase transitions and critical phenomena, small-angle scattering, spin-echo spectrometery, ultracold neutrons and pulsed-neutron sources, are covered in only a cursory manner or not at all. Nevertheless, the book could be useful to the thermal-neutron-scattering community as an introductory text.

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book notes

Constants of Diatomic Molecules. K. P. Huber, G. Herzberg. 716 pp. Van Nostrand Reinhold, New York, 1979. $27.50

This fourth volume in the Herzberg series on molecular spectra and structure contains a compilation of information on over 900 diatomic molecules and ions. Assembled from more than 200 scientific journals and monographs, the tables include electronic energies, vibrational and rotational constants and observed transitions. Footnotes indicate the reliability of the listed information and provide supplementary data on potential energy curves, spin-coupling constants, lambda-type doubling, perturbations between electronic states, hyperfine structures, rotational g factors, dipole moments, radiative lifetimes and oscillator strengths. Dissociation energies and ionization potentials are also provided in many cases. Theoretical calculations are frequently included both for comparative purposes and to close gaps in existing experimental data. Klaus-Peter Huber and Gerhard Herzberg have used a variety of experimental research as sources: electronic emission and absorption spectra, rotation–vibration spectra, rotation spectra, molecular-beam resonance studies, esr spectra, photofragment, photoion and photoelectron spectra, scattering experiments, mass spectrometry, flame photometry, and thermochemical studies. This compendium is intended for use in studies of atomic interactions, molecular structure, spectroscopy, chemical kinetics, thermochemistry and astronomy.

Man's View of the Universe. G. E. Tauber. 352 pp. Crown, New York, 1979. $19.95

Through the ages, Man's developing knowledge has led to increasingly complex theories of the nature of the universe. Gerald Tauber explores the chronological development of these concepts in *Man's View of the Universe*. Written for the layman in non-technical language, the book traces astronomical thought from the Chaldeans, Egyptians and Greeks through the Dark Ages to the scientific revolutions of Copernicus, Kepler, Newton and the modern cosmologiés. Included are descriptions of the scientific discoveries that have influenced cosmological theories and biographical sketches of the scientists who developed them. Tauber's history is well-illustrated