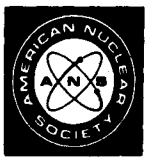
BOOK REVIEW

Selection of books for review is based on the editor's opinions regarding possible reader interest and on the availability of the book to the editor. Occasional selections may include books on topics somewhat peripheral to the subject matter ordinarily considered acceptable.



Theoretical and Experimental Methods of Heavy-Ion Physics

Editors	Z. Wilhelmi and G. Szeflinska
Publisher	Harwood Academic Publishers (1988)
Pages	288
Price	$56.00
Reviewer	George Fai

The Summer Schools in Mikołajki, Poland, have acquired a fine reputation for giving young scientists the opportunity to become acquainted with new concepts and results in nuclear physics. This volume contains the proceedings of the 19th Summer School on Nuclear Physics (1987), which focused on heavy-ion physics. The emphasis of the book is on research at energies around the coulomb barrier, encompassing such topics as fusion, binary and ternary reactions, the mean-free-path of nucleons, and the excitation and decay of giant resonances. This is the most mature area of heavy-ion physics and has strongly established itself since its beginning, about a quarter of a century ago.

These days, when the term "school" is frequently misused, it is very refreshing to see that Mikołajki has remained a school, in the sense that it provides sufficient and accessible coverage for graduate students and others interested in learning about a subfield of nuclear physics that is relatively new to them. The more or less self-contained nature of the 13 invited papers presented in this volume, together with the fact that some of the developments reviewed were reported in Mikołajki for the first time, make the book very valuable for both students and practitioners of what can be called the traditional heavy-ion field. Another attractive feature of the book is the nice balance between experimental and theoretical papers.

The first contribution is an exceptionally clear paper on binary and ternary reactions at energies below 20 MeV/nucleon by J. Wilczynski, one of the pioneers of the field. This is followed by a paper on peripheral and central collisions in the energy range between 10 and 30 MeV/nucleon, with new data on energy dissipation and momentum transfer. Several papers deal with fusion reactions, both experimentally and theoretically, so that the reader obtains a comprehensive picture of the status of this very exciting subfield. Nuclear structure questions of recent interest, such as the superdeformed band in ^{152}Dy, the interacting boson model, and supersymmetry in light nuclei, are discussed alongside the more technical question of recoil mass separation for in-beam spectroscopy.

Particularly interesting from the grand perspective of the universe is H. Rebel's contribution on the breakup of light projectiles as a source of astrophysical information. J. Dąbrowski addresses the question of the mean-free-path of a nucleon in nuclear matter, a question that is again in the forefront of interest for several subfields in nuclear physics. A. van der Woude's paper on the excitation and decay of the isoscalar giant monopole resonance suggests a nuclear matter incompressibility coefficient $K = (290 \pm 30)$ MeV, based on the most recent data. The volume is completed by the inclusion of S.Bjørnholm's paper on a beautiful and fashionable new development, the study of small metal clusters and ^{3}He droplets, where we get a new look at a number of the basic insights and problems encountered in nuclear physics with a strong hope of cross fertilization.

On the whole, the book is a useful introduction to a number of selected subjects of current interest in nuclear physics. The selection is, of course, influenced by availability, time, and place, but will please many practitioners and graduate student advisors. On a more personal note, this reviewer, who benefited from the excellent atmosphere of an earlier summer school in Mikołajki, strongly believes that the tradition of this school and proceedings must continue. It is one of the best European summer schools, and this top quality is again reflected in an excellent proceedings.

George Fai came to the United States from Hungary in 1984. He is an associate professor at Kent State University, working in theoretical nuclear physics. He is active in several forefront areas of the physics of heavy ions and excited nuclear matter, including development of a widely used theoretical event generator to simulate nuclear collisions on computers.