either clarify these ideas in class and refer the students to other works, or skip these topics in the course. Muirhead is prone to refer the reader to his more complete volume for details, but this is not a satisfactory solution to the problem of writing a really good lower-level book.

Many physics departments have already started or are considering a course in high-energy physics for first-year graduate students. Muirhead's book can be recommended as a good starting text, which treats some topics very well and which furnishes a fairly broad outline from which the instructor can mold his own course. Perhaps others will be inspired to attempt to solve the problem of writing a first-year graduate text for a field that has only indications of a firm theoretical basis and which is still rapidly changing from year to year.

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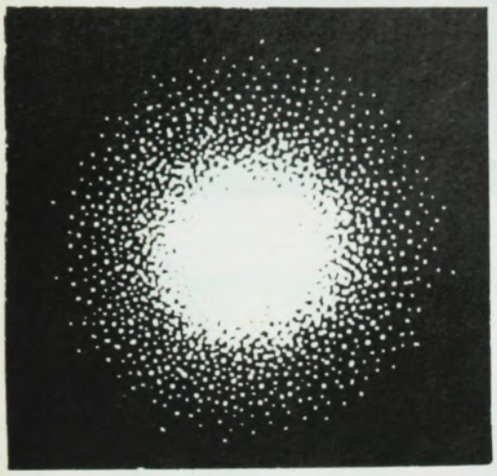
Topics in Applied Quantum Electrodynamics

Paul Urban
265 pp. Springer-Verlag,
New York, 1970. $16.70

One area of great importance in high-energy physics that has never been adequately covered in texts is the practical topic of radiative corrections to scattering processes. Paul Urban's book contains a useful pedagogical review of the basic theory and calculations appropriate to elastic and inelastic electron–proton scattering. The only other source that contains comparable material at the introductory level is D. R. Yennie's lectures published in the *1963 Brandeis Lectures in Theoretical Physics*.

Urban deserves a great deal of credit for this comprehensive treatment of a subject that has both great elegance—for example, the beautiful theorems for the summation of infrared effects—and some very unpleasant aspects—for example, the long analytical analysis required for applications to explicit experiements. Fortunately, Urban treats both aspects of the problem in a creditable manner, with sufficient detail given so that the reader can readily follow the deviations. The book includes a comparison of the classical current for treatment of soft photons with the standard evaluation of radiative corrections within the framework of quantum electrodynamics. Although the very complicated radiative corrections to inelastic processes such as electropion production (with the electron and pion



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1973, 7½ x 9¼, est. 550 pp.

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detected) are reviewed, there is unfortunately no discussion of corrections to deep inelastic electron-proton scattering (with the electron detected), or the radiative corrections to colliding-beam experiments. These are two areas of critical importance for high-energy physics for which the effects of undetected energetic photons can be especially perverse. The most lasting impression one gets from this book is that there is an overwhelming need for a systematic numerical procedure for obtaining radiative corrections applicable to a wide range of scattering experiments, based on direct numerical integration over the allowed phase space of the hard photons.

The book also contains an extensive account of the procedures used to extract the neutron form factor from quasielastic electron scattering with a careful accounting of the approximations used. An introductory chapter on the Foldy-Wouthuysen transformation to the Dirac equation suffers somewhat from the usual confusions in interpretation when quantization of the lepton field is not used. The essential corrections to Foldy-Wouthuysen results for external field interactions for bound states are not discussed.

Overall, the book serves as a valuable reference for several important topics in particle physics.

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AIP Conference Proceedings, No. 7: Exploring the History of Nuclear Physics (Conf. proc. American Academy of Arts and Sciences Conferences on the History of Nuclear Physics, 1967 and 1969). Charles Weiner, ed. 271 pp. AIP, New York, 1972. $10.00

AIP Conference Proceedings, No. 8: Experimental Meson Spectroscopy–1972 (Conf. proc. Third Philadelphia Conference, Univ. of Penn., 28–29 April 1972). Arthur H. Rosenfeld and Kwan-Wu Lai, eds. 489 pp. AIP, New York, 1972. $11.00

Amorphous and Liquid Semiconductors (Conf. proc. 4th International Conference on Amorphous and Liquid Semiconductors, Ann Arbor, Michigan, 9–13 Aug 1971). M. H. Cohen and G. Lucovsky, eds. 1050 pp.