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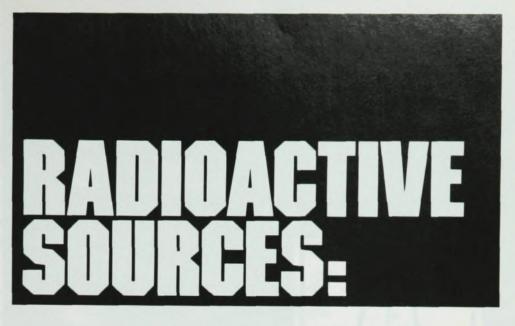
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Amorphous and Liquid Semiconductors (Conf. proc. 4th International Conference on Amorphous and Liquid Semiconductors, Ann Arbor, Michigan, 9-13 Aug 1971). M. H. Cohen and G. Lucovsky, eds. 1050 pp.



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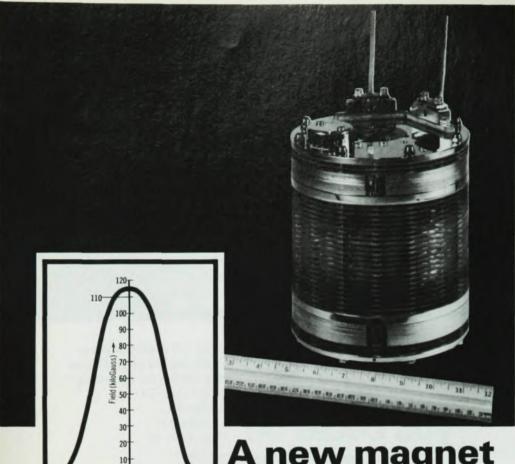
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High Energy Physics (Conf. proc. XV International Conference on High Energy Physics, Kiev, 26 Aug-4 Sept 1970). V. Shelest, ed. 740 pp. Naukova Dumka, Kiev, 1972. \$19.75

International Conference on Phonon Scattering in Solids (Conf. proc. Conference Internationale sur la Diffusion des Phonons dans les Solides, Paris, 3-6 July 1972). H.J. Albany, ed. 394 pp. La Documentation Française, Paris, 1972.

Irreversibility in the Many-Body Problem (Conf. proc. Sitges International School of Physics, Spain, May 1972). J. Biel and J. Rae, eds. 457 pp. Plenum, New York, 1972. \$29.50

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Proceedings of Southern Conference on Environmental Radiation Protection from Nuclear Power Plants (Conf. proc. 21-22 April 1971, St. Petersburg, Florida). U. S. Environmental Protection Agency, Washington, D. C., 1972

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The Use of Artificial Satellites for Geodesy: Geophysical Monograph 15 (Conf. proc. The Third International Symposium on The Use of Artificial Satellites for Geodesy, Washington, D. C., 15-17 April 1971). Soren W. Henriksen, Armando Mancini, Bernard H. Chovitz, eds. 298 pp. American

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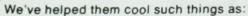
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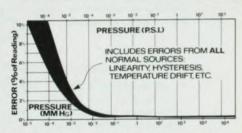
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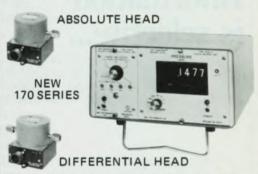
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