Meetings

Nuclear Optical Model

During the past two years the state of Florida, under the leadership of Governor Collins, has taken steps to build up nuclear science both at the University of Florida (Gainesville) and at Florida State University (Tallahassee). At Tallahassee preparations are being made for the installation of a tandem electrostatic accelerator and an electron accelerator. Both accelerators are being purchased by the state of Florida from the High Voltage Engineering Corporation.

An international conference on the "Nuclear Optical Model" was held in Tallahassee on 16–17 March 1959. This conference was organized by A. E. S. Green, who is primarily responsible for the initiation of the nuclear physics program at Tallahassee. In addition to its scientific purpose, the conference gave the visiting physicists an opportunity to learn of the plans of the nuclear physics group at Florida State.

Because of Green's extensive research on problems related to the bulk properties of nuclear matter, the choice of the topic of the conference was a natural one. In spite of the specialized nature of the topic, almost 100 nuclear physicists from many countries attended the meetings. Unfortunately, the physicists who had been invited from the U.S.S.R. did not come to the conference.

The optical model of the nucleus attempts to describe nuclear matter by assigning it properties which correspond, in the theory of light, to the refractive index and absorption coefficient of the medium. In nuclear physics one is not concerned with light waves but with the interaction of particles with nuclei. The quantity analogous to the wavelength of light is the wavelength of the particles, and the quantities analogous to the refractive index and absorption coefficients are the real and imaginary parts of the nuclear potential.

The optical model was first proposed to account for experiments on the interaction of neutrons with nuclei. These experiments had shown results which looked very much like interference and diffraction effects. At first, only qualitative fits were attempted, but more recently calculations have been performed to account for the experimental results quantitatively.

One of the sessions of the conference was concerned with the question of how well the experimental data could be fitted by optical-model calculations and of what detailed modifications of the potential had to be introduced. For example, the effect of variations of the depth of the nuclear potential at the nuclear surface and the effects of deviations of the shape of the nucleus from

a sphere were discussed. In general, surprisingly good fits to the experiments were obtained, although there are still some experimental results which offer problems in fitting.

In another session the question of the foundation of the optical model was discussed. The model represents only a phenomenological description of the nuclear interactions and has to be justified in terms of more fundamental properties of nucleons.

An excellent summary was presented at the close of the conference by R. E. Peierls of Birmingham (England). Among Peierls' comments were the following: The detailed fits which are being attempted now with optical-model calculations go far beyond what had been contemplated when this model was first applied. Different authors may arrive at different parameters in fitting the same data, the variation depending upon the authors' philosophy—that is, upon how much variation with energy and atomic weight each is willing to allow in order to obtain detailed fits. So far the fits have not been capable of answering the important theoretical question of whether the absorptive part of the potential is peaked near the nuclear surface. It was surprising to learn that almost the same parameters could be used to fit the interaction of protons and neutrons with nuclei as are used to fit the interactions of composite projectiles such as deuterons and α-particles. One would have expected, for example, that a deuteron would have a very small chance of passing through a nucleus without breaking up. As a result, the absorptive part of the potential would have been expected to be much larger for deuterons than for nucleons.

The complete proceedings of the conference were prepared in the record time of a little over a month, and copies may be obtained by writing to Professor A. E. S. Green at Florida State University.

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Forthcoming Events

August

10–13. National Medical Assoc., Detroit, Mich. (J. T. Givens, 1108 Church St., Norfolk, Va.)

10–13. Society of Automotive Engineers, natl. West Coast meeting, Vancouver, B.C., Canada. (R. W. Crory, Meetings Operation Dept., SAE, 485 Lexington Ave., New York 17.)

16–19. Botanical Nomenclature, discussions (Intern. Bureau for Plant Taxonomy and Nomenclature), Montreal, Canada. (J. Rousseau, Natl. Museum, Ottawa, Canada.)

16–21. American Pharmaceutical As-

soc., Cincinnati, Ohio. (R. P. Fischelis, APA, 2215 Constitution Ave., NW, Washington 7.)

17. Ultrasonics, natl. symp., San Francisco, Calif. (L. G. Cumming, Inst. of Radio Engineers, 1 E. 79 St., New York 21.)

17–21. Pacific Southwest Assoc. of Chemistry Teachers, Pacific Grove, Calif. (W. A. Craig, 416 N. Citrus Ave., Los Angeles 36, Calif.)

17–22. Logopedics and Phoniatrics, 11th intern. cong., London, England. (Miss P. Carter, 46 Canonbury Square, London N.1, England.)

19–26. Refrigeration, 10th intern. cong., Copenhagen, Denmark. (M. Kondrup, Danish Natl. Committee, Intern. Congress of Refrigeration, P.O. Box 57, Roskilde, Denmark.)

19–29. Botanical Cong., 9th intern., Montreal, Canada. (C. Frankton, Secretary-General, 9th Intern. Botanical Cong., Science Service Bldg., Ottawa, Ontario, Canada.)

19–29. International Assoc. of Wood Anatomists, Montreal, Canada. (IAWA, Laboratorium für Holzforschung E.T.H. Universitatstrasse 2, Zurich, Switzerland.)

19–29. Mycological Soc. of America, Montreal, Canada. (E. S. Beneke, Dept. of Botany and Plant Pathology, Michigan State Univ., E. Lansing.)

19–29. Phycological Soc. of America, Montreal, Canada. (W. A. Daily, Dept. of Botany, Butler Univ., Indianapolis 7, Ind.)

20–22. Rocky Mountain Radiological Soc., Denver, Colo. (J. H. Freed, 4200 E. Ninth Ave., Denver 20.)

20–25. Chemical Thermodynamics, symp., Wattens, Austria. (F. Vorländer, Deutsche Bunsen-Gesellschaft, Carl-Bosh-Haus, Varrentrappstrasse, 40–42, Frankfort a.M., Germany.)

20–27. Therapeutics, symp., Gardone, Italy. (R. Morf, c/o Sandoz S.A., Basel 13, Switzerland.)

20–2. Limnological Cong., 14th intern., Vienna and Salzburg, Austria. (Secretary, 14th Intern. Limnological Congress, Biologische Station, Lunz am See, Austria.)

23–26. American Farm Economic Assoc., Ithaca, N.Y. (C. D. Kearl, Dept. of Agricultural Economics, Warren Hall, Cornell Univ., Ithaca.)

23–27. Veterinary Medicine, 3rd Pan-American Cong., Kansas City, Mo. (B. D. Blood, Pan-American Congresses of Veterinary Medicine, P.O. Box 99, Azul, Buenos Aires Province, Argentina.)

24–26. American Accounting Assoc., Boulder, Colo. (C. Cox, 437 Hagerty Hall, Ohio State Univ., Columbus 10.)

24–26. Anti-Submarine Warfare (classified), symp., San Diego, Calif. (R. R. Dexter, Inst. of the Aeronautical Sciences, 2 E. 64 St., New York 21.)

24–26. Dynamics of Conducting Fluids, symp. (American Rocket Soc. and Northwestern Univ.), Evanston, Ill., (J. J. Harford, ARS, 500 Fifth Ave., New York 36.)

24–27. American Hospital Assoc., New York, N.Y. (E. L. Crosby, 18 E. Division St., Chicago, Ill.)

24–28. Australian and New Zealand Assoc. for the Advancement of Science, 34th cong., Perth, Western Australia. (J. R. A. McMillan, Science House, 157 Gloucester St., Sydney, Australia.)

24–29. Infrared Spectroscopy Inst., 10th annual, Nashville, Tenn. (N. Fuson, Director, Infrared Spectroscopy, Fisk Univ., Nashville 8.)

24–29. International Assoc. for Hydraulic Research, cong., Montreal, Canada. (IAHR, c/o Laboratoire Hydraulique, Raam 61, Delft, Netherlands.)

24–29. Ionization Phenomena in Gases, 4th intern. conf., Upsala, Sweden. (A. Nilsson, Secretary-General, Inst. of Physics, Upsala, Sweden.)

24–29. Polarography, 2nd intern. cong., Cambridge, England. (Mrs. B. Lamb, Chemistry Lab., Evershed & Vignoles, Corner of Iveagh Ave., N. Circular Rd., London N.W.10, England.)

24–30. Modern Systems for Detecting and Evaluating Optical Radiation (Intern. Optical Commission), symp., Stockholm, Sweden. (S. S. Ballard, Dept. of Physics, Univ. of Florida, Gainesville.)

25–27. Petroleum Industry Conf., AIEE, Long Beach, Calif. (N. S. Hibshman, AIEE, 33 W. 39 St., New York 18.)

25–28. Alaskan Science Conf., Alaskan Div., AAAS, 10th, Juneau. (N. J. Wilimovsky, Bur. of Commercial Fisheries, Box 2021, Juneau.)

25–28. American Dietetic Assoc., 42nd annual, Los Angeles, Calif. (Miss R. M. Yakel, ADA, 620 N. Michigan Ave., Chicago 11, Ill.)

25–30. American Ornithologists' Union, Regina, Saskatchewan, Canada. (H. G. Deignan, Div. of Birds, U.S. National Museum, Washington 25.)

26–29. International Assoc. of Milk and Food Sanitarians, Glenwood Springs, Colo. (V. T. Foley, Health Dept., Kansas City, Mo.)

26–29. International Union of Pure and Applied Chemistry, 20th conf., Munich, Germany. (Div. of Chemistry and Chemical Technology, Natl. Research Council, Washington 25.)

27–29. American Assoc., of Clinical Chemists, 11th annual, Cleveland, Ohio. (A. Hainline, Jr., AACC, Cleveland Clinic Foundation, 2020 E. 93 St., Cleveland 6.)

27–29. American Physical Soc., Hawaii. (K. K. Darrow, APS, Columbia Univ., New York 27.)

28–29. Weather Modification (with American Soc. of Civil Engineers), conf., Denver, Colo. (H. G. Houghton, AMS, Dept. of Meteorology, Massachusetts Inst. of Technology, Cambridge 39, Mass.)

28–30. American Folklore Soc., annual, Albany and Cooperstown, N.Y. (MacE. Leach, 110 Bennett Hall, Univ. of Pennsylvania, Philadelphia 4.)

28–31. Astronomical League, Denver, Colo. (R. Dakin, 720 Pittsford-Victor Rd., Pittsford, N.Y.)

28–4. International Union for Scientific Study of Population, cong., Vienna, Austria. (F. Lorimer, Dept. of Sociology, American Univ., Washington, D.C.)

30–3. American Inst. of Biological Sciences, annual, University Park, Pa. (H. T. Cox, AIBS, 2000 P St., NW, Washington 6.)

30–4. American Cong. of Physical Medicine and Rehabilitation, Minneapolis, Minn. (Miss D. C. Augustin, 30 W. Michigan Ave., Chicago 2, Ill.)

30–4. Laurentian Hormone Conf., Mont Tremblant, Quebec, Canada. (G. Pincus, 222 Maple Ave., Shrewsbury, Mass.)

30–4. Medical Education, 2nd world conf., Chicago, Ill. (World Medical Assoc., 10 Columbus Circle, New York 19.)

30–5. World Federation for Mental Health, 12th annual, Barcelona, Spain. (Miss E. M. Thornton, Secretary-General, WFMH, 19, Manchester St., London W.1, England.)

30–6. History of Science, 9th intern. cong , Barcelona and Madrid, Spain. (J. Vernet, via Layetona 141, Barcelona.)

30–6. Residues on Crops and/or the Problem of Insect Resistance to Insecticides, symp., Munich, Germany. (R. Morf, Secretary-General, IUPAC, c/o Sandoz, S. A., Basel, Switzerland.)

31–3. Biological Photographic Assoc., Montreal, Canada. (Miss J. H. Waters, P.O. Box 1668, Grand Central Station, New York 17.)

31–3. Mathematical Assoc. of America, 40th summer meeting, Salt Lake City, Utah. (H. M. Gehman, MAA, Univ. of Buffalo, Buffalo 14, N.Y.)

31–4. Haematin Enzymes, symp. (by invitation), Canberra, Australia. (A. H. Ennar, John Curtin School of Medical Research, Australian National Univ., Canberra.)

(See issue of 19 June for comprehensive list)