

SCIENCE EDUCATION

Films

Two graduate-level films (16 mm, color and sound, 45 minutes) on nucleon-nucleon scattering have been produced by the University of California's Lawrence Radiation Laboratory at Livermore and have been made available for use by interested physics departments offering graduate work in high-energy physics. Both releases are filmed lectures given by H. Pierre Noyes of the Livermore Laboratory.

The first film ("Analysis of Nucleon-Nucleon Scattering Experiments"), which is intended for use in a graduate course or seminar in nuclear physics, charts the route from scattering experiments to a unique description of the scattering matrix in terms of phase shifts. Although formal mathematics is kept to a minimum, it is presupposed that the student knows what a wave function is, how probability-current is computed from a wave function, and what is meant by a quantum-mechanical state. The film is not intended for use in undergraduate courses unless these concepts have already been introduced.

The second film ("Dispersion Theory Approach to Nucleon-Nucleon Scattering") is aimed at the advanced graduate student and staff level, or for an introductory lecture in a course on dispersion theory. It presupposes some familiarity with scattering solutions of the non-relativistic Schrödinger equation and Cauchy's theorem, and an acquaintance with Feynman diagrams, but does not assume an intimate knowledge of quantum field theory. Topics discussed are:

1. Solution of the S -wave Schrödinger equation for a superposition of exponential or Yukawa potentials by conversion to a Volterra equation, using the method of Andre Martin.
2. Solution of the same equation by partial wave dispersion relations using the N/D method; construction of the potential from the discontinuity in the partial wave amplitude.
3. Mandelstam representation for potential scattering and construction of double spectral function.
4. Relationship between the field-theoretic amplitude and nonrelativistic scattering amplitude.
5. Relationship of nucleon-nucleon scattering to the nucleon-antinucleon amplitude, pion-nucleon scattering, pion-pion scattering, and nucleon electromagnetic structure.

Both films are available on a free loan basis or can be purchased. Further information can be obtained from the Graphic Arts Department, Lawrence Radiation Laboratory, P. O. Box 808, Livermore, Calif., or from the Atomic Energy Commission film libraries at the Washington headquarters and the Chicago and San Francisco Operations Offices.

New Science Building

Dedication ceremonies for a new \$2 million science and engineering building were held February 10 on the campus of Michigan State University Oakland in Rochester, Mich. The building, provided by the State Legislature of Michigan, contains 85 000 square feet of floor space and includes teaching and research laboratories, faculty offices, classrooms, and supporting facilities for instruction in physics, mathematics, chemistry, and the engineering and life sciences.

MSUO has also announced the launching of a new science-engineering program in which majors in the various specific fields of engineering have been abandoned in favor of emphasis on mathematics, chemistry, and physics, supplemented by study of engineering applications—"The purpose is to give students the understanding needed to move in new directions, rather than training them in techniques that will be obsolete tomorrow."

A symposium on improving science education was held in connection with the dedication. Bowen C. Dees, assistant director for scientific personnel and education of the National Science Foundation, served as moderator. The speakers included Arnold B. Grobman of the University of Colorado, Paul F. Chenea of Purdue, G. Baley Price of the University of Kansas, Melvin S. Newman of Ohio State University, and Walter C. Michels of Bryn Mawr College, chairman of the Commission on College Physics.

NSF Programs

A number of changes have been announced by the National Science Foundation in its Graduate-Level Research Facilities Program (formerly known as the Graduate Research Laboratory Development Program). Eligibility requirements have been extended to include institutions having graduate programs in science or engineering leading to at least the master's degree. Previously, only institutions with doctoral programs were eligible. In addition, nonprofit institutions which do not themselves grant degrees are now eligible, provided that they are associated with colleges or universities in graduate research and training.

Funds for general-purpose research equipment (movable items, e.g., microscopes, centrifuges, x-ray diffraction apparatus, calculators, desks, etc.) may now be requested up to a maximum of ten percent of the total amount included in a facility proposal. Under the program's former rules, funds could be provided only for construction and fixed furnishings. No change has been made in the rule that the institution should provide matching funds of at least fifty percent of the total cost of the project. Copies of the brochure announcing requirements for submission of proposals are available