

parties to comment to IRS on the proposed rules. "The integrity of the provision which exempts scholarship and fellowship income from taxation," says Rogovin, "can be preserved only if the institutions concerned make a determined effort to observe the spirit underlying the exemption. Institutions have a responsibility to exercise the highest degree of care in properly characterizing payments and subsidies to students as scholarships and fellowships or as compensation."

Summer courses

Brandeis University, University of Miami, UCLA, University of Michigan, MIT, Fisk University, and NATO have announced the following courses to be held this summer:

Statistical physics, phase transitions and superfluidity will be the themes of the ninth Brandeis University summer institute in theoretical physics, to be held 20 June to 29 July in Waltham, Mass. Lecturers will include George B. Benedek, Robert Brout, Freeman J. Dyson, Mark Kac, Leo P. Kadanoff, Melvin Lax, Elliott W. Montroll, and W. F. Vinen. Because of National Science Foundation and NATO support, the institute is tuition free, and predoctoral and postdoctoral fellowships will be awarded to participants from America and Europe. For application forms and further information write to Secretary, Physics Summer Institute, Brandeis University, Waltham, Mass. 02154.

University of Miami announces a program of undergraduate grants for participants in a course on fundamental concepts in environmental and planetary sciences, to be held 17 June to 22 July. Major emphasis will be placed on fluid dynamics in the context of geophysics and planetary physics: flow phenomena, including geostrophic flow, boundary layers, wave propagation, transfer of mass and energy by convection and turbulence and energy transfer by radiation. To be eligible applicants must have a background equivalent to three years college training in mathematics (through advanced calculus) and the physical sciences. Scholarships provide

for tuition and fees, \$60 per week subsistence and all travel expenses. For further information write to S. Fred Singer, dean, School of Environmental and Planetary Sciences, University of Miami, Coral Gables, Fla.

University of California at Los Angeles announces three two-week courses this summer.

Liquid crystals, their physics, chemistry and uses will be conducted by Glenn H. Brown from 20 June to 1 July. Included in the course will be the present state of knowledge of liquid-crystal structure and properties, modern measurement techniques and the role of liquid crystals in living matter and lyotropic systems. Current and potential applications of liquid crystals to specific systems will be stressed.

From 18 to 29 July Max Garbuny will conduct a course in optical physics and its recent applications. The course treats interaction processes involved in generation, propagation and detection of coherent and incoherent light from infrared to ultraviolet. Included will be optical masers, nonlinear optics, holography, high-intensity-light-source technology and systems of detection in the electromagnetic spectrum.

Benjamin Lax will lead a course in modern solid-state physics with applications from 15 to 26 August. Topics to be covered will include crystal physics, vibrations in solids, energy bands, magnetism, superconductivity and its applications, transistor physics and semiconductor devices, electronic applications of magnetic materials, ultrasonic applications, quantum electronics, masers and lasers.

For each of the above courses, the fee will be \$300. Complete information on them can be obtained from R. E. Garrels, Physical Sciences Extension, Rm 6532 Boelter Hall, University of California, Los Angeles, Calif. 90024.

The University of Michigan College of Engineering will hold a series of intensive noncredit courses this summer for practicing scientists and engineers in rapidly developing fields of technology. From 6 to 10 June a course in semiconductor circuits will

present tools for analysis and design of modern electronic circuits using some of the latest semiconductor devices. Fee is \$175 for this course. A communications-theory course (11 to 22 July, fee \$300) will include modulation theory, statistical decision theory, information theory and coding. Applications to modern pulse-code-modulation and frequency-modulation systems will also be treated. From 8 to 19 August a course in laser theory, technology and applications will be held. Topics include fundamentals of gas lasers, impurity lasers, semiconductor lasers, coherent optics and holography followed by detailed consideration of specific lasers and their applications. Course fee is \$300.

For complete information on the above courses write to Engineering Summer Conferences, West Engineering Building, University of Michigan, Ann Arbor, Mich. 48104.

Massachusetts Institute of Technology is offering an experimental solid-state physics program from 20 June to 22 July for faculty members and representatives from government and industry. Under the program participants will work on experimental projects dealing with x-ray diffraction, crystal growth, infrared spectroscopy, magnetic resonance, galvanomagnetic effects, excess carriers in semiconductors, ferroelectricity, superconductivity, Mössbauer effect, advanced x-ray diffraction, dielectric constant, ultrasonic measurements, crystal optics and metallography. In addition, background lectures, notes, references to selected literature and tours of several MIT solid-state experimental facilities will be provided. It is expected that funds will be available for faculty participants. Further information and applications (deadline 15 April) can be obtained from Solid-State Physics Program, Rm 24-417, Center for Advanced Engineering Study, MIT, Cambridge, Mass. 02139.

Fisk University announced its 17th annual infrared-spectroscopy and gas-chromatography institute. The program includes two infrared sessions and one gas-chromatography session.

The first IR session is scheduled for 23 to 27 Aug. and is designed to

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introduce beginners to theory and applications of IR spectroscopy. In the second IR session, from 29 Aug. to 2 Sept., training in interpretation of IR spectra over a wide range of compounds will be offered as well as insight into latest developments, techniques and applications of IR spectroscopy.

The GC session, scheduled for 23 to 27 Aug., will provide basic concepts in the subject and modern GC techniques and applications. Each afternoon there will be a laboratory program in which participants will construct columns, prepare samples and run qualitative and quantitative experiments.

The institute registration fee is \$10; tuition fee \$150 for each session, and housing and meals, \$55 for each session. For further information write the Director, Fisk Infrared Institute, Box 8, Fisk University, Nashville, Tenn. 37203.

A NATO advanced study institute on optical properties of solids will be held at Freiburg, West Germany, from 7 to 20 Aug. Some 50 invited lectures will cover a wide range of topics including group theory, lattice dynamics, band theory, excitons, ultraviolet spectra of insulators, electronic spectra of molecular crystals and ions in crystal fields, vibration and local mode spectra, magneto-optical properties of semiconductors, and impurity and defect states. Codirectors of the institute are S. S. Mitra of IIT Research Institute and Sol Nudelman of University of Rhode Island, Kingston, R.I.; further information can be obtained from the latter.

Another NATO institute, on symmetry principles in elementary-particle physics, will take place at the Cekmece Nuclear Research Center in Istanbul, Turkey from 8 to 27 Aug. Headed by Behram Kursunoglu, the institute will be directed primarily to advanced graduate and postdoctoral students. Some funds will be available for those unable to obtain complete financial support elsewhere. Interested persons should write before 15 May to Prof Arnold Perlmutter, Center for Theoretical Studies, University of Miami, Coral Gables, Florida 33124. □