

calendar

MARCH 1974

- 7-9 **SPS Regional Meeting** [SPS] El Paso Tex. 1/74
- 11-14 **Fast Reactors** [British Nuclear Energy Society] London, UK 7/73
- 11-15 **Isotope Techniques in Groundwater Hydrology** [IAEA] Vienna, Austria 11/73
- 13, 14 • **Environmental Research—5th Annual Symp** [American Defense Preparedness Association] Washington, D.C. (American Defense Preparedness Association, Suite 819, 740 15th St, NW, Washington, D.C. 20005)
- 18-22 • **Lunar Science Conf** [NASA] Houston, Texas [LSI, 3303 NASA Rd 1, Houston, Texas 77058]
- 19-21 **Electro-Optics** [Kiver Communications] Brighton, UK 9/73
- 19-21 **Mechanical Properties of Materials at High Rates of Strain** [IOP Materials Testing Group] Univ of Oxford, UK [10/1/73] 11/73
- 20-22 **Tetrahedrally Bonded Amorphous Semiconductors** [APS; IBM] Yorktown Heights, N.Y. [12/3/73] 12/73
- 20-23 **Archaeometry and Archaeological Prospection** [Research Laboratory for Archaeology] Oxford, UK 10/73
- 22, 23 **SPS Zone 6 Meeting** [SPS] Orlando, Fla. 1/74
- 24-28 **Liquids and Amorphous Materials** [ACA] Univ of California, Berkeley 6/73
- 24-29 **Crystal Growth—4th International Conference on Crystal Growth** [Organizing Committee] Tokyo, Japan 10/73
- 25-28 **General Meeting** [APS] Philadelphia, Pa. 5/73
- 25-29 **International Convention and Ex-**

position [IEEE] New York, N.Y. 9/73

- 25-29 • **Petrophysics: The Physics and Chemistry of Minerals and Rocks** [NATO] Newcastle-upon-Tyne, UK (W. F. Mavor, Administrative Assistant, School of Physics, The University, Newcastle-upon-Tyne, NE1 7RU, UK) [1/31/74]
- 25-29 **Solid Surfaces** [International Union for Vacuum Science, Technique and Applications] Kyoto, Japan 8/73
- 25-29 • **3rd Solar Wind Conf** [UCLA; Univ of Arizona; AGU] Pacific Grove, Calif. (C. T. Russell, Space Science Center, Inst of Geophysics and Planetary Physics, UCLA, Los Angeles, Calif. 90024)
- 25-29 **Vacuum** [International Union for Vacuum Science, Technique and Applications] Kyoto, Japan 8/73
- 26-28 **Coherent Structures in Turbulence** [Fluid Dynamics Group, the Inst of Sound and Vibration Research] Southampton, UK 11/73
- 26-29 **Atomic and Molecular Physics** [IOP] Univ College, Swansea, UK 7/73
- 26-29 **The 142nd Meeting** [AAS] Univ of Nebraska, Lincoln 11/73
- 27, 28 **Speckle Phenomena and Their Applications** [IOP] Loughborough, UK 11/74
- 27-29 **Nuclear Structure and High-Energy Physics** [IOP] Univ of Glasgow, UK 7/73
- 28, 29 **Nuclear Medicine** [British Nuclear Medicine Soc] London 1/74
- 29, 30 **New England Bioengineering Conf** [IEEE; American Society for Engineering Education] Worcester, Mass. [12/15/73] 1/74
- 29-31 • **Seismology** [Seismological Soc of America] Las Vegas, Nev. (W.

This is a complete listing of physics-related meetings known to us. A complete calendar will appear in alternate months (no calendar in other months). Those wishing to submit items for the calendar should send complete information at least *three months* before the notice should appear.

Abbreviations:

- AAPM** American Association of Physicists in Medicine
- AAPT** American Association of Physics Teachers
- AAS** American Astronomical Society
- ACA** American Crystallographic Association
- APS** American Physical Society
- ASA** Acoustical Society of America
- OSA** Optical Society of America
- SPS** Society of Physics Students
- S of R** Society of Rheology
- AEC** US Atomic Energy Commission
- AIAA** American Institute of Aeronautics and Astronautics

- ANS** American Nuclear Society
- ASTM** American Society for Testing and Materials
- AVS** American Vacuum Society
- EPS** European Physical Society
- IAEA** International Atomic Energy Agency
- IEEE** Institute of Electrical and Electronics Engineers
- IOP** The Institute of Physics
- IUPAP** International Union of Pure and Applied Physics
- NAS** National Academy of Sciences
- NBS** National Bureau of Standards
- NSF** National Science Foundation
- ONR** Office of Naval Research
- ORNL** Oak Ridge National Laboratory

Coding:

date subject [Sponsor] Location (Contact) [abstract deadline] *Physics Today* reference

• new listing □ new or revised information

KEITHLEY'S NEW CURRENT AMPLIFIER MAKES SMALL CURRENTS INTO GIANTS



...faster than anything

Whether used in mass spectroscopy, fast semiconductor production tests, photomultiplier outputs, or whatever, the Model 427 Current Amplifier opens new dimensions in low level current measurements. It can perform optimally for dynamic range or response time, according to user's wishes. It features sensitivity to 10^{-14} ampere, switch-selected rise times to 15 microsecond and over 80 dB dynamic range. Built-in zero suppression and overload protection add to operating convenience.

RANGE 10^{-14} to 10^{-3} A

RISE TIME 15 μ S to 0.3 sec.

DYNAMIC RANGE . 40 to 80 dB

STABILITY 500 μ V/ $^{\circ}$ C

SUPPRESSION . . . 10^{-3} to 10^{-10} A

PRICE \$895 U.S.A.

SEND FOR TECHNICAL LITERATURE TODAY



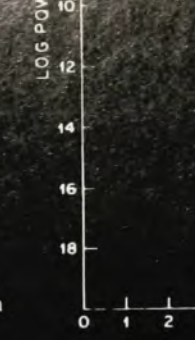
**KEITHLEY
INSTRUMENTS**

U.S.A. 28775 AURORA ROAD, CLEVELAND, OHIO 44139
EUROPE 14, AVENUE VILLARDIN, 1009 PULLEY, SUISSE
Circle No. 41 on Reader Service Card

Phys. Rev. 120, 1
 The general spin v
 a simultaneous sol
 the magnetization
 In contrast to prev
 conductivity, rela
 are all properly to
 algebraic equation
 of the wave numbe
 lutions. Some of
 ing plane waves w
 ones in the directio
 analytical solution
 the special case w
 direction of the st
 solution for the ca
 niently obtained on
 lutions for the latt
 using an IBM 709
 ative results are gi
 When relaxation a
 lected, our result
 Kittel in the stati
 found that the uni
 truly exist only un
 namely, under the
 one of the two nor
 dium.

Excitation and Be
 Resonance"
 (J. Appl. Phys. 32,
 Using the general
 the general spin w
 tion of the line sh
 metallic films is m
 conditions at the s
 set of excitation c
 lation show that,
 spacings between
 peaks are determin
 stant A, the relati
 onances are strong
 sotropy energy der
 face energy densit

MOON'S DISK



velopment of a multiton
 coupling results in a sp
 along the [001] axis, ma
 "extra" γ_5 electron of a
 tortions would be to tet
 directed along the [111]
 partially occupied. As
 ($\alpha < 60^\circ$) distortion for
 ($c/a < 1$) CoO has atomi

which bits are intro
 decoded, individua
 The term decision fe
 transmission systems
 length is assigned to
 much of the code w
 the intended messag
 quired degree of rel
 feedback applies to
 transmission system i
 is a function of both
 formation available
 results of previous t



Bounds on the error
 asymptotic relation
 of error and the ave
 achieve it are deriv
 transmission. It is s
 a sequential-sphere
 (decision-feedback),
 packed block code,
 capacity, than the
 a fixed-constraint-
 tured that it is at le
 izable decision-fees
 however, that asym
 is possible with an i
 transmission system.

because of higher-order
 and the symmetry is rho
 been prepared. Recent
 random through the latt
 Although these inclusion
 T_N , they probably do not
 Since $\Delta_{LS} > \Delta_{JT}$ in
 distortions in tetragonal
 0.91),⁷⁸ and $\text{Cu}[\text{Cr}_2]\text{O}_4$
 in FeO and CoO, noncol
 Nevertheless, this sugg
 10^{-15} at channel co
 required by the "opt
 block code, when tl

The latter point is il
 information-feedbac
 which assumes the e
 channel. Its error e
 transmission rate, ve
 length dichotomy" ex
 other systems mentic
 is zero.) Bounds are
 strain length at cap
 of the system reveal
 length required to a
 10^{-15} at channel co
 required by the "opt
 block code, when tl



The Lincoln Laboratory, a research center of the Massachusetts Institute of Technology, is engaged in research and development in advanced electronics, with emphasis on applications to national defense and space exploration. The program of research extends from fundamental investigations in selected areas, through technological development of devices and components, to the design and development of complex systems. All qualified applicants will receive consideration for employment without regard to race, creed, color or national origin. Lincoln Laboratory, Massachusetts Institute of Technology, Box 15 Lexington, Massachusetts 02173.

Radar Systems
 Air Traffic Control
 Space Communications
 Solid State Physics
 Digital Signal Processing
 Optics
 Re-entry Physics
 Computer Systems
 A description of the Laboratory's work will be sent upon request.

- 31-4 **Advances in Polymer Friction and Wear** [American Chemical Society] Los Angeles, Calif. [11/1/73] 12/73

APRIL 1974

- 1, 2 • **Synchrotron Radiation and its Applications** [IOP] Reading, UK (Meetings Officer, IOP, 47 Belgrave Sq, London, SW1X 8QX, UK) [1/4/74]
- 1-3 **Annual Meeting** [Atomic Energy Society of Japan] Sendai, Japan 10/73
- 1-3 **High-Field Phenomena Including Electrets** [Dielectrics Discussion Group] Univ of Swansea, UK 9/73
- 1-3 **Vacuum Group Meeting** [IOP] Liverpool, UK 8/73
- 2-4 **Fast Reactor Safety** [Los Angeles Section and Technical Group for Reactor Safety, American Nuclear Society] Beverley Hills, Calif. 10/73
- 2-4 □ **Mechanical Properties of Materials at High Rates of Strain** [IOP Materials Testing Group] Univ of Oxford, UK 11/73
- 2-4 **Reliability Physics Symp** [IEEE] Las Vegas, Nev. [11/13/73] 12/73
- 2-5 • **Image Processing with CRT's and Vidicons in High Energy Physics and Other Applications** [Univ of Oxford] Oxford, UK (J. H. Mulvey, Nuclear Physics Lab, Univ of Oxford, Keble Rd, Oxford, OX1 3RH, UK)
- 2-5 **Reactor Congress** [Deutsches Atomforum e.V.; Kerntechnischen Gesellschaft] Berlin, West Germany 1/74
- 3, 4 **Contacts to Semiconductors** [IOP] Univ of Manchester Inst of Science and Tech, UK 9/73
- 3-5 **Experimental Thermodynamics** [Experimental Thermodynamics Conf Committee] Leeds, UK 1/74
- 4, 5 **Magnetic Resonance in Condensed Phases including Heterogeneous Systems** [British Radio Spectroscopy Group] Nottingham, UK 8/73
- 5, 6 **Joint Meeting** [AAPT-SPS] Scranton, Pa. [3/4/74] 1/74
- 5, 6 **New England Section Meeting** [APS] Providence, R.I. 1/74
- 5, 6 **Teaching Acoustics and the Physics of Music** [Univ of Iowa; Michigan State Univ] Iowa City, Iowa [3/15/74] 1/74
- 5-9 **French Physical Society—IOP Centenary Conference** [French Physical Society; IOP] St Helier, Jersey, Channel Islands 6/73
- 7-10 • **Environmental Acoustics** [ASTM] Columbus, Ohio (J. McFadden, ASTM, 1916 Race St, Philadelphia, Pa. 19103)
- 7-12 **Geoscience Electronics** [IEEE] Washington, D.C. 9/73
- 8-10 **Engineering Aspects of Magnetohydrodynamics** [Univ of Tenn. Space Inst] Tullahoma, Tenn. [12/14/73] 10/73

NEW LISTING OF SHORT COURSES AND SCHOOLS

21-24 MAY 1974

Powders and Fine Particle Systems [Inst for Fine Particles Research] Sudbury, Ontario (A. G. Naylor, Inst for Fine Particles Research, Laurentian Univ, Sudbury, Ontario, Canada)

21 MAY-5 JUNE

Cooperative Phenomena in Multi-Component Systems ["Ettore Majorana" Centre for Scientific Culture] Erice, Italy (F. T. Arecchi, CISE, PO Box 3986, Milan, Italy)

3-14 JUNE

Contemporary Optical Engineering [Inst of Optics] Rochester, N.Y. (Inst of Optics, Summer Optics Program, Univ of Rochester, Rochester, N.Y. 14627)

6-21 JUNE

Optical Properties of Ions in Solids [NATO] Erice, Italy (B. Di Bartolo, Dept of Physics, Boston College, Chestnut Hill, Mass. 02167)

17-21 JUNE

Optical System Design [Inst of Optics] Rochester, N.Y. (Inst of Optics, Summer Optics Program, Univ of Rochester, Rochester, N.Y. 14627)

17-21 JUNE

Acoustic Emission: Use in Nondestructive Evaluation of Materials and Structures [Univ of Michigan] Ann Arbor, Mich. (W. H. Lawrence, College of Engineering, Univ of Mich, Ann Arbor, Mich. 48105)

17-28 JUNE

Lasers, Quantum Electronics, Holography [UCLA] Los Angeles, Calif. (PO Box 24902, Dept K, UCLA Ext, Los Angeles, Calif. 90024)

17-21 JUNE

Technology of Crystal Growth [UCLA] Los Angeles, Calif. (PO Box 24902, Dept K, UCLA Ext, Los Angeles, Calif. 90024)

24-28 JUNE

Radiation Effects on Semiconductor Devices [UCLA] Los Angeles, Calif. (PO Box 24902, Dept K, UCLA Ext, Los Angeles, Calif. 90024)

8-20 JULY

Atomic Structure and Mechanical Properties of Metals [Italian Physical Soc] Milan, Italy (J. C. Bilello, Scientific Secretary, Centro Studi Nucleari Enrico Fermi, Politecnico di Milano, Via C. Pascal, 3, Milan, Italy)

8-26 JULY

Mathematical Aspects of Controlled Thermonuclear Plasma Containment [Courant Inst] New York, N.Y. (Summer Inst (MFD), Courant Inst of Mathematical Sciences, NYU, 251 Mercer St, New York, N.Y. 10012)

22-26 JULY

Integrated Optics [UC Santa Barbara] Santa Barbara, Calif. (Director, Basic and Applied Sciences, Univ of Calif, Ext, Santa Barbara, Calif. 93106)

22 JULY-2 AUGUST

Nuclear Fuel and Power Management [MIT] Cambridge, Mass. (Director of the Summer Session, Room E19-356, MIT, Cambridge, Mass. 02139)

22 JULY-9 AUGUST

Origin and Abundance of the Chemical Elements [NATO] Cambridge, UK (M. Rees, Inst of Astronomy, Madingley Rd, Cambridge CB8 0HA, UK)

28 JULY-3 SEPTEMBER

Quantum Chemistry and Solid State Physics [Swedish Academy of Sciences; Norwegian Academy of Sciences] Uppsala, Sweden (Director, Summer Institute, Quantum Chemistry Group, Box 518, S-751 20 Uppsala, Sweden)

29 JULY-2 AUGUST

Physical Aspects of Nuclear Medicine [Harvard Medical School; MIT] Cambridge, Mass. (Director of the Summer Session, Room E19-356, MIT, Cambridge, Mass. 02139)

29 JULY-9 AUGUST

Advanced Study Institute on Physics of Structurally Disordered Solids [NATO] Kingston, R.I. (S. S. Mitra, Dept of Electrical Engineering, Univ of Rhode Island, Kingston, R.I. 02881)

29 JULY-9 AUGUST

Physics and Chemistry of Atmospheres [ONR] Liège, Belgium (B. M. McCormac, 3507 Carmel Terrace, Mountain View, Calif. 94040)

29 JULY-15 AUGUST

Fundamental Problems in Statistical Mechanics [Netherlands Universities Foundation for Int Cooperation; Rockefeller Univ] Wageningen, The Netherlands (R. Doop, Netherlands Universities Foundation for Int Cooperation, 27 Molenstraat, The Hague, The Netherlands)

5-9 AUGUST

Detection of Infrared Radiation [UC Santa Barbara] Santa Barbara, Calif. (Director, Basic and Applied Sciences, Univ of Calif, Ext, Santa Barbara, Calif. 93106)

18-30 AUGUST

Quantum Solids and Fluids [Canadian Assoc of Physicists] Ontario, Canada (H. R. Glyde, Atomic Energy of Canada Ltd, Chalk River, Ontario, Canada)

23-27 SEPTEMBER

X-ray Techniques for Polycrystalline Materials [McCrone Research Inst] Chicago, Ill. (The Registrar, McCrone Research Inst, 2820 S Michigan Ave, Chicago, Ill. 60616)

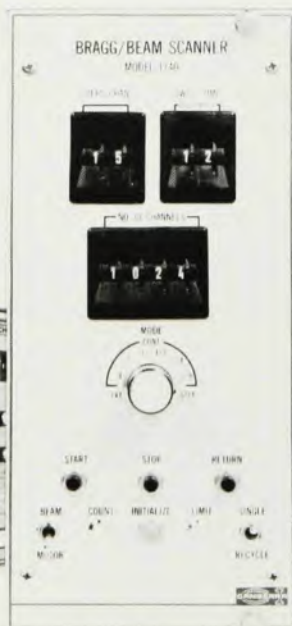
7-11 OCTOBER

Applied Polarized Light Microscopy [McCrone Research Inst] Chicago, Ill. (The Registrar, McCrone Research Inst, 2820 S Michigan Ave, Chicago, Ill. 60616)

- 8-10 **Crystallography Group Meeting** [IOP] Oxford, UK 8/73
- 8-11 • **Anomalous Absorption of High-Intensity Radiation** [Lawrence Livermore Laboratory] Livermore, Calif. (J. J. Thomson, L-32, Lawrence Livermore Laboratory, PO Box 808 Livermore, Calif. 94550)
- 9, 10 **Microstructure and Physical Properties of Nonmetallic Materials** [Materials Science Club] Univ of Lancaster, UK 9/73
- 9-11 **Optical Computing Conf** [IEEE] Zurich, Switzerland [11/15/73] 12/73
- 9-11 □ **Thin Films** [IOP] Falmer, UK 8/73
- 15-17 • **Critical Phenomena in Multi-component Systems** [Univ of Georgia] Athens, Ga. (D. P. Landau, Physics Dept, Univ of Georgia, Athens, Ga. 30602) [2/1/74]
- 16-18 • **Applications of Physics to Other Branches of Science** [Tel Aviv Univ] Moscow, USSR (E. A. Stern, Dept of Physics BJ-10, Univ of Washington, Seattle, Wash. 98195)
- 16-18 **Optical and Acoustical Micro-Electronics** [Polytechnic Inst of New York; Air Force Office of Scientific Research; ONR; Army Research Office; IEEE; OSA] Brooklyn, N.Y. [12/1/73] 7/73
- 16-18 **Technology of Controlled Nuclear Fusion** [ANS] San Diego, Calif. 7/73
- 16-19 **Electron Spectroscopy—Progress in Research and Applications** [Facultés Universitaires de Namur; Belgian Chemical and Physical Societies] Namur, Belgium [2/1/74] 12/73
- 17-19 **Negative Ions** [IOP] Liverpool, UK 1/74
- 17-19 • **Structures, Structural Dynamics and Materials** [AIAA; American Soc of Mechanical Engineers] Las Vegas, Nev. (ASME, Conf Dept, 345 E 47th St, New York, N.Y. 10017)
- 18-24 **Excited States of Biological Molecules—Int Conf** [Calouste Gulbenkian Foundation; European Protochemical Assn] Lisbon, Portugal 10/73
- 19, 20 **SPS Regional Meeting** [SPS] Fayetteville, Ark. 1/74
- 20 **Physics Teachers** [AAPT Iowa Section] Fayette, Iowa 1/74
- 21-24 • **Global Atmospheric Chemistry Symp** [American Met Soc; American Chem Soc] Detroit, Mich. (ACS, 1155 16th St, NW, Washington, D.C. 20036)
- 21-25 • **Protein Crystallography Workshop** [ACA] South Egremont, Mass. (S. Wilder, Dept of Biological Sciences, Purdue Univ, West Lafayette, Ind. 47907)
- 22 • **SPS Zone 4 Meeting** [SPS] Washington, D. C. (J. H. Taylor, Dept of Physics, Morgan State College, Baltimore, Md. 21212)
- 22-24 **Polymer Spectroscopy** [IOP] Brunel Univ, UK 8/73
- 22-25 □ **Joint Meeting** [APS-OSA] Washington, D.C. [1/25/74] 5/73
- 22-26 **Anomalous Scattering by X-rays, Neutrons and Electrons** [International Union of Crystallography] Madrid, Spain 6/73
- 23-26 **Acoustics** [ASA] New York, N.Y. 5/73
- 24, 25 **Aerospace Nuclear Systems for Power and Propulsion** [ANS; AIAA] Los Angeles, Calif. 8/73
- 24-26 • **Technology Arising from High-Energy Physics** [CERN] Geneva, Switz. (A. Caton, Scientific Conf Secretariat, CERN, CH-1211 Geneva 23, Switz.)
- 26, 27 **AAPT Colorado-Wyoming Section** [AAPT] Laramie, Wyo. 1/74
- 26, 27 • **SPS Zone 1 Meeting** [SPS] Orono, Me. (K. R. Brownstein, Dept of Physics, Univ of Maine, Orono, Me. 04473)
- 26, 27 • **SPS Zone 11 Meeting** [SPS] Laramie, Wyo. (E. A. Rinehart, Dept of Physics, Univ of Wyoming, Laramie, Wyo. 82070)
- 27 • **Missouri Physics Teachers** [AAPT Mo. Section] Maryville, Mo. (B. F. Schmidt, Physics Dept, SW Missouri State Univ, Springfield, Mo. 65802)
- 26-28 **Neutrino Physics—4th Int Conf** [Univ of Pa.; AEC; NSF] Philadel-

The X-Ray Analysis System for:

- small concentrations
- adjacent lines
- light elements



Consider Canberra's new 1740 Bragg/Beam Scanner. It lets you select, collect and display high resolution ($\sim 5\text{eV}$) wavelength data on our Model 8100 Multichannel Analyzer — automatically — giving you good, clean data, not educated guesses.

Next consider that the Bragg/Beam Scanner will also automate your stage and beam to generate precision line scans displayed in actual units — microns, angstroms, etc. And because the scanning is digitally synchronized and repeatable, you can perform ensemble averaging signal enhancement to dig data out of noise while virtually eliminating system drifts.

Finally, consider the cost. The Bragg/Beam Scanner automates your spectrometer, stage and beam for under \$2500 including the motors and their power supply. Compare that to what a computer *might* give you!

CANBERRA INDUSTRIES, INC.
45 Gracey Avenue
Meriden, Connecticut 06450
Tel.: (203) 238-2351



Circle No. 42 on Reader Service Card

- phia, Pa. 1/74
- 28-2 **Energy, Nuclear Variety, R&D; Its Problems and Solutions** [American Ceramic Soc] Chicago, Ill. [12/10/73] 1/74
- 28-2 **Grain Boundary Phenomena** [American Ceramic Soc] Chicago, Ill. [12/15/73] 1/74
- 29-3 **Lattice Distortions and Local Atomic Arrangements by X-Ray, Neutron, and Electron Diffraction** [Kernforschungsanlage Jülich GmbH; Deutsche Physikalische Gesellschaft] Jülich, West Germany 1/74

MAY 1974

- 1-3 **Conducting Organic and Transition Metal Salts** [Univ of Calif.; NSF] Lake Arrowhead, Calif. 1/74
- 1-3 • **Solar Heating, Cooling and Energy Conservation Conf** [Environmental Action of Colorado; Materials Consultants Inc] Denver, Col. (Environmental Action of Colorado, Univ of Colorado at Denver, 1100 14th St, Denver, Col. 80202)
- 2-7 **High-Energy Accelerators** [IUPAP; AEC] Stanford, Calif. 4/73
- 3, 4 • **Physics and Applications of Low Energy Accelerators** [APS] Brooklyn, N.Y. (M. Ferentz, Dept of Physics, Brooklyn College, Brooklyn, N.Y. 11210)
- 6-10 **Energy, Europe and the 1980's** [Institution of Electrical Engineers; Institution of Electronic and Radio Engineers; IEEE] London, UK 9/73

- 6-10 **National Computer Conf and Exposition** [American Federation of Information Processing Societies, Inc] Chicago, Ill. [10/1/73] 9/73
- 7, 8 **Centenary Meeting** [IOP] London, UK 10/73
- 7-10 **Cryogenic Engineering Conf and Exhibition** [International Cryogenic Engineering Committee; Cryogenic Assn of Japan] Kyoto, Japan [12/1/73] 8/73
- 8-10 **Gas-Cooled Reactors; HTGR and GCFBR** [ANS] Gatlinburg, Tenn. 10/73
- 10, 11 **Energy Resources** [APS Ohio Section; Air Force Inst of Tech.; Univ of Dayton] Wright Patterson Air Force Base, Ohio 10/73
- 12-17 **Electrochemical Society Meeting** [Electronics Div.] San Francisco, Calif. [12/1/73] 10/73
- 14-17 □ **INTERMAG—Int Magnetics Conf** [IEEE] Toronto, Ont. Canada 10/73
- 15-17 **Int Conf on Plasma Sciences** [IEEE Nuclear and Plasma Sciences Soc.] Knoxville, Tenn. 11/73
- 19-24 **Mass Spectrometry—22nd Annual Conf** [Amer Soc for Mass Spectrometry] Philadelphia, Pa. 1/74
- 20-24 **Seminar: Population Doses and Applications of Radiological Safety Standards** [IAEA] Ljubljana, Yugoslavia 11/73
- 21-23 • **Instrumentation—20th Int Symp**

- [Instrument Society of America] Albuquerque, N.M. (R. G. Baker, Boeing Aerospace Co, Orgn. 2-5683, M. S. 86-14, PO Box 3999, Seattle, Wash. 98124)
- 21-24 **National Physics Congress** [Australian Inst of Physics] Adelaide, South Australia 1/74
- 22, 23 • **Laser Induced Damage in Optical Materials** [NBS; ASTM] Boulder, Col. (A. J. Glass, Lawrence Livermore Lab, PO Box 808, Livermore, Calif. 94550)
- 23-26 **New Methods in Molecular Spectroscopy** [German Bunsen Soc for Physical Chemistry] Kassel, West Germany 1/74
- 27-31 • **Channeling and Blocking Phenomena** [Inst National des Sciences et Techniques Nucleaires] Saclay, France (A. P. Sorriaux, BP No. 6, 91190 Gif-sur-Yvette, France)
- 27-31 • **Initial Research Programs for New Large Telescopes** [Science Research Council] Geneva, Switz. (A. Reiz, ESO TP Div, CERN, CH-1211 Geneva 23, Switz.)
- 27-3 • **Searching for Earthquake Fore-runners—Int Symp** [Uzbek Acad of Sciences; Soviet Geophysical Committee; Joint Council on Seismology and Earthquake Engineering; Inst of the Earth's Physics; USSR Academy of Sciences] Tashkent, USSR (A. D. Powsner, Soviet Geophysical Committee, Molodezhnaya 3, Moscow 117296, USSR)
- 29-31 **Frequency Control Symp** [US

A unique Gamma Reference Source Set

The gamma reference source set offers:

1. 9 sources covering 60keV to 1.8MeV.
2. consistently accurate, reliable calibration of source activity.
3. rectangular plastic sources, color-coded, to suit most applications and to provide easy identification and handling.
4. sources sealed by ultrasonic welding for maximum safety.
5. point source geometry with visible active center.
6. complete with forceps, positron absorbers, adaptor for 25 mm dia counting trays.
7. calibration certificate and data sheet supplied with each source.
8. separate replacement sources on request.
9. available in shielded or unshielded versions.

Gamma reference source set
compact, convenient, consistent

Amersham/Searle
AMERSHAM/SEARLE CORPORATION
An Activity of G. D. Searle & Co and the Radiochemical Centre

2636 S. Clearbrook Drive/Arlington Heights, Illinois 60005
Telephone: (312) 593-6300—Telex: 28-2452
In Canada: 400 Iroquois Shore Road/Oakville, Ontario
Telephone: (416) 364-2183—Telex: 069-82216

S747012



Circle No. 43 on Reader Service Card

LOCK-IN AMPLIFIERS?

"Sure they've been used by thousands of scientists and engineers to solve a wide variety of applications problems, but what could I do with a lock-in amplifier?"

Well, you could measure weak photoluminescence decay. You could measure birefringence in materials. You could construct a self-balancing ac bridge. You could do IR quantum counting. You could build a temperature controller. You could stabilize your laser. You could conduct non-destructive testing. You could study ac losses and flux motions in superconducting materials. You could . . .

The truth is that the applications for lock-in amplifiers are virtually unlimited. If you'd like to learn more about how lock-in amplifiers can solve your instrumentation problem, send for our latest lock-in amplifier applications catalog. It contains detailed discussions of what lock-ins are, what they do, how they do it, which types are best for what and, of course, typical applications.



Write Princeton Applied Research Corporation, Scientific Instrument Division, P.O. Box 2565, Princeton, New Jersey 08540, or telephone (609) 452-2111. In Europe, contact Princeton Applied Research GmbH, D8034 Unterpfaffenhofen, Waldstrasse 2, West Germany.

**PRINCETON
APPLIED
RESEARCH**



Booths 33-35

Physics/Optics Show

Circle No. 44 on Reader Service Card

- 30-1 **□ Electrode Phenomena in Gas Discharge** [IUPAP; EPS; Inst of Physics, Bucharest] Bucharest, Rumania (C. Popovici, Dept of Plasma Physics, Inst of Physics, Bd Păcii 222, Bucharest, Rumania)

JUNE 1974

- 2-6 **Radiation Protection—Philosophy and Implementation** [Society for Radiological Protection] Aviemore, Scotland [9/30/73] 12/73
- 4-7 **• Measurement of Laser Emissions for Regulatory Purposes** [Food and Drug Adm; NBS] Rockville, Md. (R. W. Peterson, Div of Electronic Products, Bureau of Radiological Health (RH-220), 5600 Fishers Lane, Rockville, Md. 20852) [2/15/74]
- 4-10 **Multiparticle Hadrodynamics—5th Int Symp** [Karl Marx Univ] Leipzig, East Germany 1/74
- 5-7 **Submillimeter Waves and their Applications** [IEEE; OSA] Atlanta, Ga. [1/11/74] 9/73
- 9-12 **Nuclear Reactors** [Canadian Nuclear Assoc] Montreal, Quebec 1/74
- 10-13 **Joint Congress** [Canadian Assn of Physicists; Canadian Astronomical Society] St John's, Newfoundland 10/73
- 10-13 **Quantum Electronics** [IEEE; AIP; APS; OSA] San Francisco, Calif. [1/11/74] 8/73
- 10-14 **Hyperfine Interactions Studied in Nuclear Reactions and Decay** [Organizing Committee of International Conference on Hyperfine Interactions Studied in Nuclear Reactions and Decay] Uppsala, Sweden [10/31/73] 8/73
- 10-14 **Molecular Structure and Spectroscopy—29th Annual Symp** [Ohio State Univ] Columbus, Ohio 1/73
- 10-14 **Reactions Between Complex Nuclei** [IUPAP; AEC; NSF] Vanderbilt Univ, Nashville, Tenn. 12/73
- 10-14 **Vacuum Technology** [French Vacuum Soc] Versailles, France 1/74
- 10-15 **• Hyperfine Interactions Studied in Nuclear Reactions and Decay** [Univ of Uppsala] Uppsala, Sweden (E. Karlsson, Univ of Uppsala, Inst of Physics, Box 530, S-75121 Uppsala 1, Sweden) [2/1/74]

- 11-13 **Effects of Radiation on Structural Materials** [American Soc for Testing and Materials] Gatlinburg, Tenn. [10/15/73] 1/74
- 11-14 **• Electrodynamics of Substorms and Magnetic Storms** [American Geophysical Union] Bayse, Va. (American Geophysical Union, 1707 L St NW, Washington, D.C. 20036)
- 11-14 **Nuclear Medicine** [Society of Nuclear Medicine] San Diego, Calif. 9/73
- 11-14 **Solar X and Gamma Radiation** [Int Astronomical Union; Committee on Space Research] Buenos Aires, Argentina 1/74

- 12-14 **International Microwave Symp** [IEEE] Atlanta, Ga. 10/73
- 12-14 **Electromagnetic Windows** [ONR] Atlanta, Ga. 9/73
- 13, 14 **General Meeting** [APS] Salt Lake City, Utah [4/5/74] 9/73
- 17-19 **Fluid and Plasmadynamics** [AIAA] Palo Alto, Calif. 8/73
- 17-19 **• Velikovsky and the Recent History of the Solar System** [Student Academic Freedom Forum] Hamilton, Ontario (S. L. Talbot, *Pensée Magazine*, PO Box 414, Portland, Ore. 97207)
- 17-20 **Thermography** [European Thermographic Assn; American Thermographic Society] Amsterdam, Netherlands 6/73
- 17-21 **Fusion Technology** [FOM-Inst voor Plasmafysica] Noordwijkerhout, Netherlands 1/74
- 17-21 **• Solar Terrestrial Physics** [COSPAR; IAU] Sao Paulo, Brazil (E. R. Dyer, NAS, 2101 Constitution Ave, Washington, D.C. 20037)
- 19-21 **Satellite Dynamics: Orbit and Attitude** [Committee on Space Research; Int Astronomical Union] Sao Paulo, Brazil [3/1/74] 12/73
- 20-22 **Physics Teachers** [AAPT] Boone, N.C. 7/73
- 20-22 **RF Plasma Heating** [APS; IEEE] Texas Tech Univ, Lubbock, Texas 12/73
- 23-28 **20th Annual Meeting** [ANS] Philadelphia, Pa. 6/73
- 24-27 **Surface Properties of Materials** [Graduate Center for Materials Research] Rolla, Mo. [4/30/74] 1/74
- 24-28 **Gas Cooled Reactors** [IAEA] Julich, West Germany 11/73
- 24-28 **• General Relativity and Gravitation 7** [IUPAP] Tel-Aviv, Israel (G. Shaviv, Dept of Physics and Astronomy, Tel-Aviv Univ, Ramat Aviv, Israel)
- 24-29 **Numerical Methods for Fluid Mechanics** [International Committee for Fourth International Conf on Numerical Methods in Fluid Mechanics] Univ of Colorado, Boulder [12/31/73] 11/73
- 26-28 **Surface Physics—3rd Int Symp** [IUPAP] Utrecht, The Netherlands [2/1/74] 10/73

JULY 1974

- 1-4 **Liquid and Solid Helium** [EPS Low Temperature Physics Section] Haifa, Israel [5/15/74] 11/73
- 1-5 **Cosmic Plasma Physics—2nd European Conf** [EPS] Abingdon, UK 1/74
- 1-5 **Precision Electromagnetic Measurements** [Royal Society; Inst of Electrical Engineers; Union Radio-Scientifique International; Inst of Electronic and Radio Engineers; National Physical Laboratory; Scientific Instrument Manufacturers' Assn.] London, UK 8/73
- 2-4 **Neutron Activation Analysis—3rd Symp on Recent Developments** [Symposium Organizing Committee] Cambridge, UK 10/73

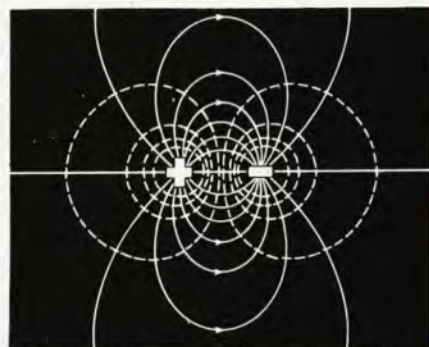
- 7-11 **Health Physics** [Health Physics Society] Houston, Tex. 9/73
- 8-12 • **Electron Lifetimes in Metals** [NSF] Eugene, Ore. (D. H. Lowndes, *Lifetimes Conf.*, Dept of Physics, Univ of Oregon, Eugene, Ore. 97403) [4/19/74]
- 9-12 **Electromagnetic Wave Theory** [Inst of Electrical Engineers] London, UK 8/73
- 9-12 **Interrelation of Structure, Properties and Applications of Polymers** [IOP] Univ of Nottingham, UK 12/73
- 9-12 **Kinetics of Chemical Reactions in Heterogeneous Systems** [Société de Chimie physique] Dijon, France, 11/73
- 14-20 **Radiation Research—Fifth Int Congress** [International Assn for Radiation Research; Radiation Research Society] Seattle, Wash. [2/1/74] 12/73
- 15-17 **Thermophysics and Heat Transfer** [AIAA; American Soc of Mechanical Engineers] Boston, Mass. 6/73
- 15-19 • **Conf for New Science Department Heads** [Research Corp] Point Clear, Ala. (W. S. Bacon, Research Corp, 405 Lexington Ave, New York, N.Y. 10017)
- 15-19 **Discharges and Electrical Insulation in Vacuum—6th Int Symp** [Organizing Committee] Swansea, UK [3/31/74] 10/73
- 15-19 **Dynamic Studies with Radioisotopes in Clinical Medicine and Research** [IAEA] Knoxville, Tennessee 11/73
- 15-19 **Physics of Semiconductors** [IUPAP] Stuttgart, West Germany 5/73
- 15-20 **Rarefied Gas Dynamics** [9th International Symposium on Rarefied Gas Dynamics] Göttingen, West Germany [12/1/73] 10/73
- 16-19 **Atomic Spectroscopy—6th Conf** [European Group for Atomic Spectroscopy] Berlin 11/73
- 18, 19 **Materials for Medical Use** [IOP; Biological Engineering Society] Cambridge, UK 8/73
- 21-24 **Photoconductor Image Technology—Theory and Practice** [Soc of Photographic Scientists and Engineers] North Randall, Ohio 1/74
- 22-25 • **Lattice Defects in Semiconductors** [Inst für Angewandte Festkörperphysik] Freiburg, West Germany (A. Rauber, Inst für Angewandte Festkörperphysik, D-7800 Freiburg, Eckerstrasse 4, West Germany)
- 22-26 **Atomic Physics—4th Int Conf** [Organizing Committee] Heidelberg, West Germany 6/73
- 22-26 **Vacuum Ultraviolet Radiation Physics—4th Int Conf** [IUPAP; Deutsche Physikalische Gesellschaft; Deutsches Elektronen-Synchrotron] Hamburg, West Germany [3/20/74] 1/74
- 23-31 **Acoustics** [British Acoustical Society; IOP; International Commission on Acoustics] London, UK 1/73
- 28-1 **Medical Physics** [AAPM] Kansas City, Mo. 6/73
- 29-1 **X-ray Processes in Matter** [Ministry of Education of Finland] Helsinki Univ of Tech, Otaniemi, Finland [5/1/74] 12/73
- 29-4 **Variable Stars in Stellar Systems** [USSR Academy of Sciences] Moscow [5/31/74] 11/73

AUGUST 1974

- 1, 2 **Microwave Acoustics** [IOP] Univ of Lancaster, UK 9/73
- 7-9 **Applications of X-ray Analysis** [Denver Research Inst] Denver, Col. 1/74
- 9, 10 • **Users Association Meeting** [Bates Linear Accelerator] Middleton, Mass. (E. C. Booth, Dept of Physics, Boston Univ, Boston, Mass. 02215)
- 12-16 **Radiological Impacts of Releases from Nuclear Facilities into Aquatic Environments** [IAEA] Otaniemi, Finland 11/73
- 14-16 **Inter- and Intra-Molecular Forces** [US National Committee for Crystallography; International Union of Crystallographers] Pennsylvania State Univ, University Park 6/73
- 17-27 • **History of Science—14th Int Congress** [National Research Council] Tokyo, Japan (H. David, *Assembly of Behavioral and Social Sciences, National Research Council*, 2101 Constitution Ave, Washington, D.C. 20418)
- 18-23 □ **Use of Computers in Radiation Therapy—5th Int Conf** [Organizing Committee] Hanover, N.H. 7/73
- 19-21 **Optical Information Processing** [Australian Academy of Science; International Commission for Optics] Sydney, Australia [2/74] 6/73
- 19-22 **The 143rd Meeting** [AAS] Univ of Rochester, Rochester, N.Y. 11/73
- 19-23 **Crystallography** [ACA] Pennsylvania State Univ. 12/73
- 19-23 **Diffraction Studies of Real Atoms and Real Crystals** [International Union of Crystallography; Australian Academy of Science] Melbourne, Australia 7/73
- 19-23 **Internal Structure of Hadrons** [APS Div. of Particles and Fields] Andover, N.H. 1/74
- 19-23 □ **Planetary Satellites** [Int Astronomical Union, COSPAR] Ithaca, N.Y. (J. A. Burns, 111 Thurston Hall, Cornell Univ, Ithaca, N.Y. 14850) [3/15/74]
- 19-23 □ **Tradition and Change in Physics Graduate Education** [APS: AAPT] Univ Park, Pa. (M. L. Perl, SLAC, Stanford, Calif. 94305) [3/30/74]
- 19-24 • **Terrestrial Electromagnetic Distance Measurements and Atmospheric Effects on Angular Measurements** [Int Assoc of Geodesy] Stockholm, Sweden (I. R. Brook, *Geodetiska Brynan, Rikets Allmänna Kartverk, Fack, S-162 10, Valby 1, Sweden*)
- 21-23 **Engineering in the Ocean Environment** [IEEE] Halifax, N.S. 12/73
- 25-31 **Combustion—15th Int Symp** [Organizing Committee] Tokyo, Japan [1/1/74] 8/73

MONROE ELECTRONICS, INC. **isoprobe®** INSTRUMENTS

measure the
**electrostatic
properties**
of materials



MEASUREMENTS OF:

- ELECTRETS
- PHOTORECEPTORS for electrophotography and xerography
- CONTACT POTENTIALS
- CHARGE ACCUMULATION and DECAY

Isoprobe Instruments measure electrostatic surface potential and electrostatic fields without any physical contact to the surface measured.

FEATURES:

- Simple, Straightforward Operation
- Accurate, Reliable, Driftfree
- Absolute Calibration
- Small Spot Measurements—to 0.03" Diameter
- Millivolt to Kilovolt Ranges

Write Today for Catalogs

M E MONROE ELECTRONICS, INC.
100 Housel Avenue
Lyndonville, New York 14098

Circle No. 45 on Reader Service Card

CRYOGENIC Temperature Controller



Model 5301

Accurate temperature control in Research Dewars, Cryogenic Freezers, Tensile Cryostats for physics, chemistry, metallurgy and other scientific fields where the process, temperature and/or control requirements change frequently. System features control stability better than $.01^\circ\text{K}$ from below 0.3° to 320°K with less than one micro-watt power dissipation in the sensor. Three mode control: Proportional, rate and reset with internal parameter controls, allowing to tune the controller to thermal characteristics of the system. 100 watts output, short circuit proof, DC for minimum interference to other low level instrumentation.

artronix
INSTRUMENTATION

1314 Hanley Industrial Court, St. Louis, Mo. 63144
(314) 968-4740

PROGRAMMER



Model 5350

The Model 5350 Programmer is an electro-mechanical function generator, consisting of a digitally controlled servo-system driving a 10 turn potentiometer at a wide range of sweep rates. The Programmer finds application in the process control field with other instrumentation, whose output is controlled by a resistance or resistance ratio, such as powersupplies, magnetic generators, audio or RF oscillators as well as temperature, deposition-rate, vacuum and similar controllers.

artronix
INSTRUMENTATION

1314 Hanley Industrial Court, St. Louis, Mo. 63144
(314) 968-4740

Circle No. 46 on Reader Service Card

AUGUST 1974

- 25-31 **Electron Microscopy—8th Int Congress** [Australian Academy of Science] Canberra, Australia 8/73
- 26-28 **Nuclear Power Plant Siting** [ANS] Portland, Ore. 10/73
- 26-30 **• Electronics and Geophysics—11th National Convention** [New Zealand Electronics Inst; IEEE; IOP] Auckland, N.Z. (Nelcon '74. Centre for Continuing Education, The Univ of Auckland, Private Bag, Auckland, N.Z.) [12/31/73]
- 26-30 **Environmental Impact of Cooling Systems and the Thermal Discharges at Nuclear Power Stations** [IAEA] Oslo, Norway 11/73
- 26-30 **Fourth Int Conf on Raman Spectroscopy** [OSA] Bowdoin College, Brunswick, Me. 11/73
- 26-30 **Optical Methods in Scientific and Industrial Measurements** [International Commission for Optics] Tokyo, Japan 8/73
- 26-30 **Spectral Lines—2nd Int Conf** [APS Div of Electron and Atomic Physics] Eugene, Ore. 12/73
- 26-5 **• Reference Coordinate Systems for Earth Dynamics** [IAU; COSPAR] Torun, Poland (G. C. Weiffenbach, Earth Dynamics Program, Smithsonian Astrophysical Observatory, 60 Garden St, Cambridge, Mass. 02138)
- 27-30 **Few Body Problems in Nuclear and Particle Physics** [IUPAP] Université Laval, Québec, Canada 11/73
- 28-30 **• Drops and Bubbles—Their Science and the Systems They Model** [Jet Propulsion Lab; California Inst of Tech] Pasadena, Calif. (D. J. Collins, JPL, 4800 Oak Grove Dr, Pasadena, Calif. 91103)

SEPTEMBER 1974

- 2-5 **Laser Atmospheric Studies** [American Meteorological Soc; OSA] Sendai, Japan [4/1/74] 1/74
- 2-5 **• Stars and Stellar Evolution** [IAU] Trieste, Italy (B. Stromgren, Observatoriet, Ostervoldgade 3, Copenhagen K, Denmark)
- 2-6 **• Applications of the Mossbauer Effect** [Organizing Committee] Bendor, France (C. Janot, Laboratoire de Physique du Solide, C.O. 140, 54037 Nancy-Cedex, France) [4/15/74]
- 2-6 **• Molecular Dynamics of Complexes in Solution** [Univ of Liège] Liège, Belgium (P. Laszlo, Inst de Chimie, Univ de Liège, Sart-Tilman par 4000 Liège, Belgium)
- 2-6 **Neutron Capture, Gamma Ray Spectroscopy—2nd Int Symp** [Reactor Centrum Nederland] Petten (N.H.), The Netherlands [6/20/74] 12/73
- 2-6 **Siting of Nuclear Power Plants** [IAEA] Bordeaux, France 11/73
- 2-7 **5th Int Conf on Atmospheric Electricity** [Int Commission on Atmospheric Electricity] Garmisch-Partenkirchen, West Germany [9/15/73] 12/73

- 3-5 **• Atomic and Molecular Physics of Ionized Gases—2nd European Conf** [EPS] Innsbruck, Austria (T. D. Mark, Inst für Atomphysik, Mullerstrasse 23/1, A-6020 Innsbruck, Austria)
- 3-7 **Heat Transfer—5th Int Conf** [Organizing Committee] Tokyo, Japan 7/73
- 4-6 **Elementary Particle Physics at Ultra-High Energies** [IOP] London, UK 9/73
- 4-6 **Thermophysical Properties of Solids at High Temperatures—4th European Conf** [Société Nationale Française des Hautes Températures et des Réfractaires] Orleand, France 12/73
- 4-6 **• UV and X-ray Spectroscopy of Astrophysical and Laboratory Plasmas** [IAU] Cambridge, Mass. (W. H. Parkinson, Harvard College Observatory, 60 Garden St, Cambridge, Mass. 02138)
- 5-7 **Particles and Fields** [APS Div of Particles and Fields] Williamsburg, Va. 1/74
- 8-11 **Advanced Reactors: Physics, Economics and Design** [ANS] Atlanta, Ga. 11/73
- 9-11 **• Preparation and Properties of Electronic Materials** [American Inst of Mining, Metallurgical and Petroleum Engineers] Boston, Mass. (R. A. Burrmeister Jr, Hewlett-Packard Labs, 1501 Page Mill Rd, Palo Alto, Calif. 94304) [5/1/74]
- 9-12 **Gas Discharges—3rd Int Conf** [Inst of Electrical Engineers] London 1/74
- 9-13 **• Atmospheric Diffusion and Air Pollution** [American Met Soc, World Met Org] Santa Barbara, Calif. (S. R. Hanna, Atmospheric Turbulence and Diffusion Lab, PO Box E Oak Ridge, Tenn. 37830) [3/1/74]
- 9-13 **• Dynamics of Stellar Systems** [IAU] Besançon, France (I. King, Astronomy Dept, Univ of California, Berkeley, Calif. 94720)
- 9-13 **Nuclear Structure and Spectroscopy** [Dutch Ministerie voor Onderwijs en Wetenschappen; Dutch Physical Soc; IUPAP; EPS] Amsterdam, The Netherlands [6/1/74] 1/74
- 9-13 **Photoelectronic Image Devices** [Imperial College, UK] London, UK 9/73
- 9-14 **Magnetic Resonance and Related Phenomena** [IOP] Univ of Nottingham, UK 6/73
- 15-19 **Thin Film Conf** [IOP] York, UK 12/73
- 16-18 **• Chemical Kinetics Data for the Lower and Upper Atmosphere** [Int Council of Scientific Unions] Warrenton, Va. (S. W. Benson, SRI, 333 Ravenswood Ave, Menlo Park, Calif. 94025) [4/1/74]
- 16-18 **Solid-State Devices** [IOP] Nottingham, UK 8/73
- 16-19 **• Photon Detectors** [Int Measurement Confederation] Siófok, Hungary (IMEKO Secretariat, 6th Symp on Photon Detectors, 1371 Budapest 5, POB 457, Hungary) [3/31/74]

- 18, 19 **Electrical Properties of Polymers** [Polymer Physics Group of IOP] Cardiff, UK 12/72
- 19, 20 **Aspects of High Speed Rotation** [IOP] Birmingham, UK 12/73
- 22-25 • **Electro-optical Properties of Macromolecular Solutions** [Univ of Liège; Ministère de l'Education Nationale] Liège, Belgium (C. Houssier, *Labatoire de Chimie Physique, Université de Liège, Sart-Tilman, 4000 Liège, Belgium*) [4/15/74]
- 22-27 **9th World Energy Conf** [Organizing Committee] Detroit, Mich. 10/73
- 23-25 **Computational Methods in Nonlinear Mechanics** [Organizing Committee] Univ. of Texas, Austin [2/1/74] 8/73
- 23-25 • **Nondestructive Testing in the Nuclear Power Industry** [ANS] Columbus, Ohio (H. Berger, *Institute for Materials Research, Reactor A-106, Washington, D.C. 20234*) [4/12/74]
- 24-26 • **High Resolution Molecular Spectroscopy** [Inst of Atmospheric Optics] Novosibirsk, USSR (Yu. S. Makyskhin, *Inst of Atmospheric Optics, Tomsk-29, USSR*)
- 30-2 **Applied Superconductivity Conf** [APS; IEEE] Argonne National Lab, Argonne, Ill.; National Accelerator Lab, Batavia, Ill. [5/1/74] 12/73
- 30-4 • **Neutron Dosimetry in Biology and Medicine—2nd Symp** [Organizing Committee] Neuherberg, West Germany (Symp Secretariat, *Gesellschaft für Strahlen- und Umweltforschung MBH, D-8042 Neuherberg/München, Ingolstädter Landstr 1, West Germany*)
- 30-4 **Nuclear Medicine—1st World Congress** [World Federation of Nuclear Medicine and Biology] Tokyo, Japan [12/31/73] 10/73
- 30-4 **Reactor Symp** [IAEA] Vienna, Austria 11/73
- 30-4 **The Upper Atmosphere** [American Meteorological Soc] Atlanta, Ga. [3/15/74] 11/73
- 30-5 • **Space Stations, Present and Future—25th Int Astronautical Congress** [Int Astronautical Fed] Amsterdam, The Netherlands (Int Astronautical Federation, 250 Rue Saint-Jacques, 75005 Paris, France) [3/31/74]
- OCTOBER 1974**
- 6-11 **Planetarium Conf** [Int Soc of Planetarium Educators] Atlanta, Ga. 1/74
- 7-10 • **Electrostatic Aspects of Electrophotography** [IEEE] Pittsburgh, Pa. (C. Gallo, *Xerox Corp, Bldg 147, Rochester, N.Y. 14644*) [3/1/74]
- 7-10 **11th Rare Earth Research Conf** [Inst for Atomic Research] Traverse City, Mich. 12/73
- 9-11 • **Electronic Structure of the Actinides** [Argonne] Argonne, Ill. (F. Y. Fradin, *Materials Science Div, Argonne National Lab, Argonne, Ill. 60439*)
- 10, 11 • **Lunar Dynamics and Selenodesy—8th GEOP Conf** [AGU] Columbus, Ohio (American Geophysical Union, 1707 L St, NW, Washington D.C. 20036)
- 13-17 **Electrochemical Soc Meeting** [Electronics Div] New York, N.Y. [5/1/74] 1/74
- 15-18 **Annual Meeting** [OSA] Houston, Texas 7/73
- 15-19 **Radiology and Nuclear Medicine** [Latin Country Radiologists; Italian Soc of Radiology and Nuclear Medicine] Venice, Italy 1/74
- 18, 19 • **Ohio Section Meeting** [APS] Bowling Green, Ohio (APS, 335 E 45th St, New York, N.Y. 10017)
- 20-23 **Electron Devices** [IEEE] Washington, D.C. 9/73
- 21-24 • **Cloud Physics** [American Met Soc] Tucson, Ariz. (G. A. Dawson, *Inst of Atmospheric Physics, Univ of Arizona, Tucson, Ariz. 85721*) [4/19/74]
- 21-24 **Population Exposures** [Health Physics Society] Knoxville, Tenn. [7/1/74] 10/73
- 21-25 **Condensed Matter—2nd Conf** [EPS] Budapest, Hungary [6/1/74] 11/73
- 21-25 **Thermodynamics of Nuclear Materials** [IAEA] Vienna, Austria [4/15/74] 11/73
- 28-31 • **Instrumentation Challenges of Today** [Instrument Soc of America] New York, N.Y. (ISA/74 Conf, *Instrument Soc of America, 400 Stanwix St, Pittsburgh, Pa. 15222*)
- 28-31 □ **Plasma Physics Div** [APS] Albuquerque, N.M. (APS, 335 E. 45th St, New York, N.Y. 10017)
- 29-2 • **Theoretical Plasma Physics** [IUPAP; USSR Academy of Sciences] Kiev, USSR (A. Sitenko, *Inst of Theoretical Physics, 252130 Kiev Metrologicheskaja 14B, USSR*)
- 31-2 **Nuclear Physics Div Meeting** [APS] Pittsburgh, Pa. [8/23/74] 9/73
- NOVEMBER 1974**
- 3-8 **Latin American Societies of Nuclear Biology and Medicine—5th Congress** [Latin-American Assn of Biological and Nuclear Medicine Societies] La Paz, Bolivia 11/73
- 5-8 **Acoustics** [ASA] St Louis, Mo. 7/73
- 10-14 **Engineering in Medicine and Biology** [IEEE] Philadelphia, Pa. 7/73
- 10-14 **Society of Exploration Geophysicists 44th Meeting** [Society of Exploration Geophysicists] Dallas, Tex. 12/73
- 11, 12 • **LAMPF Users Group Meeting** [LAMPF Users Group Inc] Los Alamos, N.M. (L. Agnew, *LAMPF Users Group, Inc, PO Box 1663, Los Alamos, N.M. 87544*)
- 11-13 □ **Ultrasonics Symp** [IEEE] Milwaukee, Wis. (M. Levy, *Physics Dept, Univ of Wisconsin, Milwaukee, Wis. 53201*) [8/1/74]
- 11-15 **Plasma Physics and Controlled Nuclear Fusion Research** [IAEA] Tokyo, Japan 11/73
- 12-14 • **Aerospace and Aeronautical Meteorology** [American Met Soc] El Paso, Texas (W. L. Webb, *Physics Dept, Univ of Texas, El Paso, Texas*) [5/15/74]

INCREMENTAL PLOTTER Model 1653

A high speed, 22 inch recorder designed to operate on-line to scientific and general purpose computers in graphic output applications.



Featuring:

- Plug-to-plug compatibility (hardware and software) with all standard 300 steps/sec. plotters used in the computer field (CALCOMP and COMLOT).
- Z-fold paper (367 ft. long) folding conveniently into notebook size.
- 0.01 inch step (0.25 mm optional) with 300 steps/sec. operation.
- Single step resolution with one step repeatability.
- Pen point exposure for manually setting origin.
- Simple control panel layout with single function switch.
- Integral chromed steel stand with paper storage.

artronix
INSTRUMENTATION

1314 HANLEY INDUSTRIAL CT.
ST. LOUIS, MISSOURI 63144

Circle No. 47 on Reader Service Card

KLINGER "Precision at Work" GONIOMETRIC CRADLES

$\pm 30^\circ$ Angular Measurements
For Fine Optical Positioning



GR Series

- Provides $\pm 30^\circ$ rotational movement about an external axis for precise orientation of mechanical and optical components.
- Available in a series of modular sizes, each stackable and able to mate with other Klinger fine quality optical components.
- Angular position determined to 1 arc degree from a side mounted scale and 1 arc minute from drum vernier.
- Pre-loaded ball bearing cradle for minimal friction and or play.

Send for Catalog

KLINGER SCIENTIFIC APPARATUS CORP.

83-45 Parsons Blvd., Jamaica, N.Y. 11432 (212) 657-0536

See Us Booth 73—Physics/Optics Show
Circle No. 48 on Reader Service Card

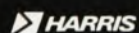
When PRD makes power amplifiers, it makes them wideband and tunable.



Our new 7825 Wideband Power Amplifier offers the highest gain, best flatness, lowest output impedance and best linearity available. It provides 10 watts of undistorted power from 10Hz to 10MHz, has switchable input impedance (high or low z), switchable gain (40 or 60 dB), and complete protection against overload.

The 7815 Tunable RF Power Amplifier is ideal for obtaining up to 8 watts of RF power in the 10 to 500 MHz range. The 7805 Broadband RF Power Amplifier is an all-purpose, 10-watt instrumentation amplifier in the 0.05 to 80 MHz range.

For literature describing these and other instruments, write:



PRD Electronics, Inc.
A subsidiary of Harris-Intertype Corporation
1200 Prospect Avenue
Westbury, N.Y. 11590 Tel: (516) 334-7810

Circle No. 49 on Reader Service Card

NOVEMBER 1974

- 18-21 • **Weather Modification—4th Conf** [American Met Soc] Fort Lauderdale, Fla. (R. Sax, Experimental Meteorology Lab, NOAA, PO Box 8044, Univ of Miami Branch, Coral Gables, Fla. 33124) [5/22/74]
- 18-22 **Analytical Chemistry and Spectroscopy** [Fed of Analytical Chemistry and Spectroscopy Societies] Atlantic City, N.J. 1/74
- 25-27 **Fluid Dynamics Div Meeting** [APS Div. of Fluid Dynamics] Pasadena, Calif. [9/20/74] 10/73

DECEMBER 1974

- 1-5 **Joint Winter Meeting** [AAPM-Radiological Society of North America] Chicago, Ill. 7/73
- 2-4 **Electron and Atomic Physics Div Meeting** [APS Electron and Atomic Physics Div] Chicago, Ill. [9/20/74] 10/73
- 3-5 **Power Semiconductors and their Applications** [Institution of Electrical Engineers] London, UK 10/73
- 3-6 **Magnetism and Magnetic Materials** [IEEE; AIP] San Francisco, Calif. 10/73
- 5-7 □ **General and Southeastern Sectional Meeting** [APS] Atlanta, Ga. (APS, 335 E. 45th St, New York, N.Y. 10017)
- 8-11 • **Electron Devices Meeting** [IEEE] Washington, D.C. (IEEE, 345 E 45 St, New York, N.Y. 10017)
- 9-13 **Ionizing Radiation for Sterilization of Biomedical Products and Biological Tissues** [IAEA] Bombay, India 11/73
- 10-13 **The 144th Meeting** [AAS] Gainesville, Fla. 7/73
- 11-13 **Scintillation and Semiconductor Counter Symp—Nuclear Science Symp** [IEEE; AEC; NASA; NBS] Washington, D.C. 7/73

JANUARY 1975

- 6-8 • **Mechanics and Physics of Fracture** [IOP; The Metals Soc] Cambridge, UK (Meetings Officer, IOP, 47 Belgrave Sq, London SW1X 8QX, UK)
- 29-1 □ **January Meeting** [APS-AAPT] Anaheim, Calif. (APS, 335 E 45th St, New York, N.Y. 10017)

FEBRUARY 1975

- 6, 7 **Molecular Transitions and Relaxations** [Michigan Foundation for Advanced Research] Midland, Mich. 12/73
- 16-21 **Radiology—11th Inter-American Congress** [Inter-American College of Radiology] Bogota, Columbia 12/73

MARCH 1975

- 3-7 • **Nuclear Cross Sections and Technology** [APS Nuclear Physics Div; ANS Reactor Div; NBS; AEC] Washington, D.C. (W. W. Havens Jr, Div of Nuclear Science and Engineering, Columbia Univ, New York, N.Y. 10027)

12-14 ☐ Particle Accelerator Conf
[IEEE; NBS; APS; AEC; NSF]
Washington D.C. 12/73

24-27 Int Convention and Exposition
[IEEE] New York, N.Y. 10/73

31-3 General Meeting [APS] Denver,
Colo. 7/73

APRIL 1975

2-4 Crystallography Group Meeting
[IOP Crystallography Group] Lan-
caster, UK 10/73

8-11 Acoustics [ASA] Austin, Tex. 7/73

8-11 Engineering Uses of Coherent Op-
tics [IOP] Glasgow, UK 1/74

9-11 Temperature Measurement [Mate-
rials Testing Group of IOP; Inst. of
Measurement and Control; Inst of
Electrical Engineers] Teddington,
UK 1/73

14-17 Magnetism [IOP; IEEE; Inst of
Electrical Engineers] London, UK
8/73

28-1 General Meeting [APS] Washing-
ton, D.C. 10/73

MAY 1975

5-8 • Static Electrification—4th Conf
[IOP] London (R. Corbett, Dept of
Electrical Engineering, Univ of
Southampton, Southampton SO9
5NH, Hants, UK)

12-14 International Microwave Symp
[IEEE] Palo Alto, Calif. 10/73

19-21 Aerospace Electronics [IEEE]
Dayton, Ohio 10/73

28-30 Laser Engineering and Applica-
tions [IEEE] Washington, D.C.
8/73

JUNE 1975

15-20 21st Annual Meeting [American
Nuclear Society] Dallas, Tex.
10/73

16-18 General Meeting [APS] Knoxville,
Tenn. 10/73

19-21 General Meeting [AAPT] Boulder,
Colo. 7/73

JULY 1975

8-12 Phonon Scattering in Solids—2nd
Int Conf [Organizing Committee]
Univ of Nottingham, UK 7/73

13-17 Health Physics [Health Physics
Society] Buffalo, N.Y. 10/73

24-30 Int Conf on the Physics of Elec-
tronic and Atomic Collisions [Univ
of Washington] Seattle, Washing-
ton. 11/73

27-31 Medical Physics [AAPM] San An-
tonio, Tex. 7/73

AUGUST 1975

3-7 Medical Physics [AAPM] San An-
tonio, Texas 1/74

7-15 Crystallography [Int Union of Crys-
tallography] Amsterdam, The Neth-
erlands 10/73

14-20 • Low Temperature Physics—
14th Int Conf [IUPAP; Int Inst of
Refrigeration] Otaniemi, Finland
(O. V. Lounasmaa, Low Tempera-
ture Lab, Helsinki Univ of Tech,
Otaniemi 02150, Fin.) [5/15/75] ☐

NEW

Instant light measurement in 12 optical units*



Model 550 Radiometer/Photometer

*Direct Reading in 12 Optical Units

- | | |
|--------------------------|--------------------------------|
| 1. Watt/CM ² | 7. Phot |
| 2. Joule/CM ² | 8. Candela |
| 3. Ft. Candle | 9. Ft. Lambert |
| 4. Ft. Candle-Sec. | 10. Watt/CM ² -Ster |
| 5. Lux | 11. Ampere |
| 6. Lux-Sec | 12. Coulomb |

• Autoranging— 7 Decades

• CW and Pulsed Light Measurements

- Single, Stable, Low Noise, Silicon Multiprobe Detector
- 3½ Digit Readout With Decade Presentation
- Ambient Light Compensation
- Radiometric and Photometric

- Accuracy: 5%
- Stability and Repeatability: better than 1%
- Simplicity of Operation
- Portable
- Rechargeable Battery Option
- Production and Research Applications
- Low Cost

The Model 550 System offers the optimum in price/performance capability. Instruments are available for 15 day evaluation on a consignment order basis. Find out why industry surveys continue to rank EG&G as #1 in light measurement instruments. Write or call for a catalog and more information: EG&G, Inc., Electro-Optics Division, 35 Congress St., Salem, Mass. 01970. Tel. (617) 745-3200. On West Coast, Tel. (213) 484-8780.

EG&G
ELECTRO-OPTICS DIVISION

Circle No. 50 on Reader Service Card