

**EIGHTH**  
**SCINTILLATION**  
**AND SEMICONDUCTOR**  
**COUNTER SYMPOSIUM**



**SHOREHAM HOTEL**

Calvert Street and Connecticut Avenue, N. W.

Washington, D. C.

March 1 - 3, 1962



Sponsored Jointly by  
ATOMIC ENERGY COMMISSION  
INSTITUTE OF RADIO ENGINEERS  
NATIONAL BUREAU OF STANDARDS  
AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS

THURSDAY, MARCH 1, 1962

- 8:30 A.M. **REGISTRATION**—Terrace Banquet Room Lobby
- 9:30 A.M. **SESSION I**—Terrace Banquet Room  
**SCINTILLATORS**  
**Chairman:** R. Hofstader  
Stanford University

1. Recent Developments in Alkali Halide Scintillators (20 min.)  
W. W. Managan, Harshaw Chemical Co.
2. The Scintillation Bubble Chamber (15 min.)  
Richard H. Milburn, Tufts University
3. Response of NaI(Tl) to X-Rays and Low Energy Gamma Rays (10 min.)  
W. C. Kaiser, S. I. Baker, A. J. McKay,  
I. S. Sherman, Argonne National Laboratory

COFFEE BREAK

4. Studies of the Scintillation Process in CsI(Tl) (10 min.)  
R. Gwinn and R. B. Murray, Oak Ridge National Laboratory
5. Effects of Delta Rays on the Response of Inorganic Scintillators to Heavy Ions (10 min.)  
R. B. Murray and A. Meyer, Oak Ridge National Laboratory
6. Resolution and Line Shape in Scintillation Counters (10 min.)  
J. B. Prescott and P. S. Takhar, University of British Columbia
7. The Effect of Dislocation Density on the Energy Resolution of Sodium Iodide Scintillators (10 min.)  
I. Cooke and D. L. Reid, University of Manitoba

THURSDAY, MARCH 1, 1962

- 2:00 P.M. **SESSION II**—Terrace Banquet Room  
**PHOTOMULTIPLIERS AND IMAGE TUBES**  
**Chairman:** L. Costrell  
National Bureau of Standards

1. Progress on Photomultiplier Tubes at EMI Electronics, Ltd. (15 min.)  
J. Sharpe, EMI Electronics, Ltd., Hayes, Middlesex, England
2. Progress in Photomultiplier Tubes for Scintillation Counting and Nuclear Physics (15 min.)  
G. Pietri, Laboratoire D'Electronique et de Physique Appliquees, Paris

3. Some Recent Developments in Photomultipliers for Scintillation Counting (15 min.)  
R. M. Matheson, RCA, Lancaster
4. What's New at DuMont (15 min.)  
J. G. Koosman, Allan B. DuMont Laboratory

COFFEE BREAK

5. New Developments in Photoemissive Tubes (15 min.)  
F. W. Schenkel, CBS Laboratories
6. Development of ASCOP Photomultipliers (10 min.)  
J. P. Causse, Electro-Mechanical Research, Inc.
7. Field Enhanced Transmission Secondary Emission for High Speed Counting (10 min.)  
E. J. Sternglass and G. W. Goetz, Westinghouse Research Laboratory
8. The Further Development of a Transmission Type Image Intensifier by 20th Century Electronics, Ltd. (10 min.)  
D. L. Emberson, 20th Century Electronics, Ltd., New Addington, Croyden, Surrey, England
9. Electron Multiplication Utilizing Continuous Surfaces (10 min.)  
W. C. Wiley and F. C. Hendee, Bendix Research Laboratory
10. Photomultiplier Single-Electron Statistics (10 min.)  
R. F. Tusting, Q. A. Kerns, and H. K. Knudsen, Lawrence Radiation Laboratory, Berkeley

THURSDAY, MARCH 1, 1962

- 7:15 P.M. **DINNER SESSION**—West Ballroom  
**Chairman:** G. A. Morton  
Radio Corporation of America, Princeton
- After Dinner Speaker: L. J. Haworth, Commissioner, Atomic Energy Commission

After Dr. Haworth's talk there will be an open discussion period for those who wish to join in. Questions from the floor on any germane subject directed at large or to any member of the Symposium will be in order and encouraged.

The advance registration fee for the dinner session is \$4.00. (If accommodations are still available tickets will be sold at registration desk for actual cost of \$6.00.)

The hotel will make available bar service from 6:00 - 7:00 P.M. in the registration foyer.

FRIDAY, MARCH 2, 1962

- 9:00 A.M. **SESSION III**—Terrace Banquet Room  
**COUNTER SYSTEMS AND APPLICATIONS**  
**Chairman:** W. A. Higinbotham  
Brookhaven National Laboratory

1. Recent Developments in Multichannel Pulse Height Analysis (15 min.)  
R. L. Chase, Brookhaven National Laboratory
2. Survey of Nanosecond Techniques (15 min.)  
A. L. Whetstone, University of Pennsylvania
3. Particle Type Discrimination by Phosphor Decay (15 min.)  
R. B. Owen, Atomic Energy Research Establishment, Harwell, England
4. Gamma Ray Scintillation Spectrometry—A Report on Recent Developments (10 min.)  
R. L. Heath, Phillips Petroleum, Idaho Falls

COFFEE BREAK

5. Nuclear Instrumentation for Scintillation and Semiconductor Spectroscopy (10 min.)  
T. L. Emmer, Oak Ridge National Laboratory
6. Time Resolution of a Scintillation Counter System (10 min.)  
A. K. Bjerke, Q. A. Kerns, and T. A. Nunamaker, Lawrence Radiation Laboratory, Berkeley
7. Rejection of Background Radiation Pulses in Hornyak Buttons (10 min.)  
A. DeVolpi and K. Porges, Argonne National Laboratory
8. A Fast Pulse Voltage Multiplier for Particle Identification (10 min.)  
C. H. Vincent, United Kingdom Atomic Energy Authority, England
9. The Application of Automatic Testing to Complex Nuclear Physics Experiments (10 min.)  
F. A. Kirsten, Lawrence Radiation Laboratory, Berkeley

FRIDAY, MARCH 2, 1962

- 1:30 P.M. **SESSION IV**—Terrace Banquet Room  
**SEMICONDUCTOR RADIATION DETECTORS**  
**Chairman:** C. J. Borkowski  
Oak Ridge National Laboratory

1. The "State of the Art" in Nuclear Particle Detectors (20 min.)  
James W. Mayer, Hughes Aircraft Company

2. Semiconductor Detectors in Nuclear Physics (20 min.)  
D. A. Bromley, Yale University
3. Properties of an n<sup>+</sup>ip<sup>+</sup> Semiconductor Detector (10 min.)  
F. P. Ziemba, G. Pelt, G. Ryan, L. Wang and R. Alexander, Solid State Radiations, Inc.
4. The Window Thickness of Diffused Junction Detectors (10 min.)  
R. L. Williams and P. P. Webb, RCA-Victor, Montreal

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5. Considerations in the Development and Use of Very Thin Diffused-Junction Counters Suitable for  $\Delta E/\Delta X$  Detection (10 min.)  
C. N. Inskeep, Sarks-Tarzian, Inc., W. W. Eidson, and R. A. LaSalle, Indiana University
6. Semiconductor Fast Neutron Detectors (10 min.)  
G. Dearnaley, A. T. G. Ferguson, and G. C. Morrison, Atomic Energy Research Establishment, Harwell, England
7. Improved Techniques for Producing P<sup>+</sup>-I-N<sup>+</sup> Diode Detectors (10 min.)  
J. L. Blankenship and C. J. Borkowski, Oak Ridge National Laboratory
8. Pulse Shape Discrimination in P-N Junction Detectors (10 min.)  
Herbert Funsten, Princeton University
9. The Operation of Solid State Alpha Counters in Chemical Process Streams (10 min.)  
L. Cathey and W. J. Jenkins, I. E. DuPont, Savannah River
- \*10. B<sup>10</sup> Diffused Junction Detectors in N-Type Silicon  
H. M. Mann and F. J. Janarek, Argonne National Laboratory
- \*11. Response of Silicon Surface Barrier Detectors to Hydrogen Ions of Energies 25 to 250 keV  
R. I. Ewing, Sandia Laboratory
- \*12. Silicon Surface Barrier Detectors with High Reverse Breakdown Voltages  
R. J. Fox and C. J. Borkowski, Oak Ridge National Laboratory
- \*13. Solid State Particle Detectors—Some Methods and Techniques  
Niels J. Hansen, Argonne National Laboratory

\* Presented by title only. To be published in Proceedings of Symposium.

SATURDAY, MARCH 3, 1962

9:00 A.M. SESSION V—North Room  
TRACK IMAGING AND SPARK  
CHAMBERS

Chairman: George T. Reynolds  
Princeton University

1. The Status of the Scintillation Chamber (20 min.)  
Martin L. Perl, University of Michigan
2. Review of Spark Chambers (20 min.)  
James W. Cronin, Princeton University
3. Some Measurements of the Efficiency for  
Observing Photoelectrons in Image Intensifiers  
(10 min.)  
J. R. Waters, G. T. Reynolds, D. B. Scarl, and  
R. A. Zdanis, Princeton University

COFFEE BREAK

4. Observation of the Focussed Ring of Cerenkov  
Light from a Single Particle Using Image  
Intensifiers (10 min.)  
S. K. Poultney and J. R. Waters, Princeton  
University
5. Ionization Density Effects in Spark Chambers  
(10 min.)  
E. Engels, D. Roth, J. W. Cronin, and M. Pyka,  
Princeton University
6. Spark Chamber for Electronic Data Retrieval  
(10 min.)  
Michael Neumann and Herrick Sherrard  
University of Chicago
7. The Reduction of Delay Between Particle Passage  
and Spark Chamber HV Pulse (10 min.)  
Joachim Fischer and Gus T. Zorn, Brookhaven  
National Laboratory
8. A New Technique for Recording Heavy Primary  
Cosmic Radiation and Nuclear Processes by  
Dislocation Decoration in Silver Chloride Single  
Crystals (10 min.)  
C. B. Childs, N.A.S.A., Goddard Space Flight  
Center and Lawrence Slifkin, University of  
North Carolina

SATURDAY, MARCH 3, 1962

9:00 A.M. SESSION VI—Terrace Banquet Room  
SPACE APPLICATIONS

Chairman: F. B. McDonald  
N.A.S.A., Goddard  
Space Flight Center

1. Nuclear Particle Spectrometers for Satellites and  
Space Probes (15 min.)  
E. L. Hubbard, University of Chicago

2. Practical Aspects of a Scintillation Spectrometer  
System (10 min.)  
John Gilroy, Argonne National Laboratory
3. A Double Gamma-Ray Spectrometer to Search  
for Positrons in Space (10 min.)  
T. L. Cline, E. W. Hones, Jr., and P.  
Serlemitsos, N.A.S.A., Goddard Space Flight  
Center
4. Scintillation Counter Telescope for Charge and  
Mass Identification of Primary Cosmic Rays  
(10 min.)  
D. A. Bryant and F. B. McDonald, N.A.S.A.,  
Goddard Space Flight Center

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5. Detector for Low Energy Gamma Ray  
Astronomy Experiment (10 min.)  
K. J. Frost and E. D. Rothe, N.A.S.A.,  
Goddard Space Flight Center
6. Use of Scintillation Counters for Space  
Radiation Measurements (10 min.)  
R. V. Smith, J. B. Reagan, and R. A. Alber,  
Lockheed Missiles and Space Company
7. Application of Nuclear Semiconductor  
Detectors for Proton Spectrometry in Space  
Applications (10 min.)  
S. S. Friedland, F. P. Ziemba, R. M. Olson,  
and H. DeLyser, Solid State Radiations, Inc.
8. High Energy Gamma Ray Satellite Experiment  
(10 min.)  
C. P. Leavitt, University of New Mexico
9. Lunar Composition by Scintillation Spectroscopy  
(10 min.)  
M. A. Van Dilla, E. C. Anderson, and A. E.  
Metzger, Los Alamos Scientific Laboratory

SYMPOSIUM REGISTRATION

Registration will begin at 8:30 A.M., March 1,  
1962, at the Terrace Banquet Room Lobby, Shore-  
ham Hotel. Registration fee is \$8.00.

ADVANCE REGISTRATION

Advance registration will minimize delays. The  
advance registration fee for dinner session is \$4.00.  
(If dinner accommodations are still available tickets  
will be sold at registration desk for actual cost of  
\$6.00.) Note saving available by advance registra-  
tion. Upon request, full refunds on unused advance  
registrations for both the Symposium and dinner  
will be made. Mail your registration with remittance  
to the 8th SSCS, P. O. Box 101, Germantown, Mary-  
land. Make all remittances payable to "8th SSCS."

Note: Extra Registration Forms

Extra registration forms and programs may be  
obtained by writing to the above address.

PROCEEDINGS OF THE SYMPOSIUM

The fee of \$8.00 for the Symposium includes  
the published *Proceedings of the Symposium*. These  
proceedings will be published by the Professional  
Group on Nuclear Science of IRE and will be mailed  
at no additional cost to the registrants. The address  
(please make it legible) appearing on your registra-  
tion card will be that to which the proceedings will  
be mailed.

HOTEL RESERVATIONS

A limited number of rooms at reduced rates have  
been set aside for members of the Symposium at the  
Shoreham Hotel. Make reservations early to assure  
accommodations. To take advantage of the reduced  
rates you must notify the Shoreham Hotel that you  
are attending the Scintillation and Semiconductor  
Counter Symposium. A hotel card is enclosed for  
your convenience.

EXHIBITS

Exhibits pertinent to the Symposium will be found  
in the foyer to the right of the banquet room and  
along the Bird Cage Walk.

Exhibits will be open:

Thursday—10:00 A.M.—6:45 P.M.  
Friday —10:00 A.M.—9:00 P.M.  
Saturday— 9:00 A.M.—1:00 P.M.

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