A REPORT ON THE ACTIVITIES

of the

DEPARTMENT OF PHYSICS

to the Dean of the

COLLEGE OF ENGINEERING

for the year

1953-1954
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I. INTRODUCTION

This report describes the activities of the physics department during 1953-54 in teaching and research. The immediately following sections include summaries, in tables and graphs, of enrollments, numbers of physics majors, degrees conferred, distribution of staff and funds in fields of research and results of research in theses and publications. Later sections give detailed information on the activities of individual members of the senior staff.

Continuing intensive thought has been given to the teaching of physics at all levels. The replacement of the two-semester course in general physics for engineering and science students by a three-semester course gives the department a long-sought opportunity to improve the presentation of this difficult course. Proposals for substantial improvements in the engineering physics and IAS physics curricula have been made but have met with objections by the respective College Policy committees (Section II, 4). The teaching of essential modern physics to engineering students is a subject of nationwide concern; a national conference on the introduction of solid state physics into engineering education was held at Allerton in March. It was organized and led by Professor Seitz.
Discussion of the best selection of material for graduate training in physics is the continuing concern of a committee on graduate study. A kind of post-doctoral school of physics of solids and nuclear physics is a consequence of the availability of contract funds to employ research associates. At present there are 18 young Ph.D.'s in this group, engaged in research and participating in seminars.

Research in the department has had a steady growth in quantity and quality. The physics of solids program begun in 1949 has developed the most distinguished and productive group of its kind in a university. The 350 MEV betatron group is emerging in a competitive field as the source of the most precise and critical results on the interaction of high energy x-rays and nuclei. Choice and interpretation of experiments are guided by our outstanding theorists in this field. Three of our youngest staff members have had brilliant successes in independent but related researches which are important to both nuclear and solid state physics: Slichter in nuclear magnetic resonance, Frauenfelder in angular correlation of radiations from nuclei in solid materials, and Wheatley in nuclear alignment in crystals at very low temperatures. Other examples of distinguished work could be cited.

Twenty one Ph.D. theses were completed in 1953-54.
Each is a substantial, original contribution to fundamental physics and is the result of at least two full years of research.

Leadership in the Control Systems Laboratory was provided largely by physicists who are normally members of the department; three worked full time and seven half-time in this important and urgent classified research project. The teaching staff of the physics department was maintained at approximately the normal level by temporary replacements and by voluntary part-time transfers to teaching of some of the research staff in the department.
II. TEACHING

1. Enrollments in Courses and Degrees Conferred

A summary of enrollments in courses, numbers of majors in physics at various levels and of degrees conferred in 1953-54 is given in Table I. In Figures 1 and 2 there is a comparison of these numbers with corresponding numbers in recent years.

One principal difference with respect to the previous year is a nearly 50% increase in the enrollments in the elementary courses, owing to the increased number of engineering students and the initiation of the new three-semester course which enrolled about 200 of the present freshman engineering class at the same time that the sophomores are finishing the old Physics 104.

A second notable difference is the large number of Ph.D. degrees, 21 in comparison with 13 last year and an average of 13 per year over the past four years. The prospect is that there will be about 25 Ph.D. degrees conferred in 1954-55. The senior class, on the other hand, is smaller than the average of the past few years.

The plan of education in physics for both graduate and undergraduate majors is to require a good grounding in fundamental physics and to offer few specialized courses except as seminars or service courses for other departments. Hence, the enrollments in advanced courses for physics students is relatively large and averaged about 25.
TABLE I. Enrollments in Courses and Degrees in Physics

A. Registration in Courses

The total registration in courses in physics during the year was as follows:

<table>
<thead>
<tr>
<th>Type of Courses</th>
<th>I Sem.</th>
<th>II Sem.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic physics (&quot;100&quot; courses)--regular</td>
<td>917</td>
<td>979</td>
</tr>
<tr>
<td>Basic physics (&quot;100&quot; courses)--correspond.</td>
<td>66</td>
<td>62</td>
</tr>
<tr>
<td>&quot;200&quot; and &quot;300&quot; courses</td>
<td>263</td>
<td>281</td>
</tr>
<tr>
<td>Graduate (&quot;400&quot;) courses</td>
<td>236</td>
<td>204</td>
</tr>
<tr>
<td><strong>Total registrations</strong></td>
<td>1482</td>
<td>1526</td>
</tr>
</tbody>
</table>

The first semester registration (exclusive of correspondence courses) in comparison with recent years is shown in Figure 1.

B. Physics Majors

The numbers of individuals whose major subject is physics enrolled during the year are as follows:

- Undergraduates - IAS College: 13
- Undergraduates - Engineering College: 136
- Undergraduates or Graduates - Teacher Training: 2
- Graduate students in physics: 152

**Total physics majors**: 302

C. Degrees Conferred

The degrees conferred are shown in the following table:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. in Physics (IAS)</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>B.S. in Physics (IAS)</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>B.S. in Engineering Physics</td>
<td>1</td>
<td>3</td>
<td>11</td>
<td>13</td>
</tr>
<tr>
<td>Master's in Physics</td>
<td>3</td>
<td>18</td>
<td>11</td>
<td>30</td>
</tr>
<tr>
<td>Master's in Teacher Train.Physics</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>13</td>
</tr>
<tr>
<td>Ph.D. in Physics</td>
<td>5</td>
<td>4</td>
<td>18</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total degrees conferred</strong></td>
<td></td>
<td></td>
<td></td>
<td>72</td>
</tr>
</tbody>
</table>

A comparison with recent years is shown in Fig. 2.
Fig. 1

I Semester Registrations in Physics Courses

- "100" Courses
- "200" and "300" Courses
- "400" Courses
- "493" - Research Course

Previous to 1947-48 the "100" Courses were composed of a quiz and a laboratory course. Only quiz courses have been included in this curve.
Fig. 2

Degrees Conferred in Physics Department
(Includes June Candidates for Year Indicated)

- Bachelor's Degree
- Master's Degree
- Doctor's Degree
2. Staff

Detailed lists of the teaching staff and their assignments are available but are not included in this summary report. In Figure 3 a plot is shown of the full-time equivalent staff in teaching and research, at junior and senior levels.

3. New Course in General Physics (Physics 106-7-8)

Physics 106, the first third of the new three-semester course in elementary physics for engineering and science students, was offered to a full class for the first time beginning in February, 1954. A pilot section of 20, started in February, 1953, is completing the third semester, Physics 108, in the current semester. The enrollment in Physics 106 was slightly over 200, about a third of the entering freshmen. The course is going well. The students are responsive and not noticeably less mature than the sophomores we had in the previous course.

The following advantages of the new course over the old appear to be distinctly realized:

a. There is definitely less pressure to cover the subject rapidly. This is very important because of the great number of precise concepts that must be introduced in a course in general physics. Difficult points can be discussed at length and illustrated with more problems and applications.
Fig. 3

Teaching and Research Staff

--- Senior Staff Teaching
--- Junior Staff Teaching
--- Senior Staff Research (Does not include dept. members on G&L Project)
--- Junior Staff Research

No. of equiv. full-time men

<table>
<thead>
<tr>
<th>Year</th>
<th>Senior Staff Teaching</th>
<th>Junior Staff Teaching</th>
<th>Senior Staff Research</th>
<th>Junior Staff Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>1946-47</td>
<td>13</td>
<td>11_2</td>
<td>10</td>
<td>9_2</td>
</tr>
<tr>
<td>1947-48</td>
<td>18</td>
<td>15_2</td>
<td>15</td>
<td>9_2</td>
</tr>
<tr>
<td>1948-49</td>
<td>26</td>
<td>22_2</td>
<td>16_2</td>
<td>15</td>
</tr>
<tr>
<td>1949-50</td>
<td>29_2</td>
<td>27</td>
<td>19</td>
<td>16_2</td>
</tr>
<tr>
<td>1950-51</td>
<td>24</td>
<td>24</td>
<td>15_2</td>
<td>16_2</td>
</tr>
<tr>
<td>1951-52</td>
<td>24_1</td>
<td>24_1</td>
<td>16_2</td>
<td>15</td>
</tr>
<tr>
<td>1952-53</td>
<td>26</td>
<td>26</td>
<td>16_2</td>
<td>15</td>
</tr>
<tr>
<td>1953-54</td>
<td>32</td>
<td>32</td>
<td>16_2</td>
<td>15</td>
</tr>
</tbody>
</table>
b. The schedule—two lectures per week and two 2-hour periods for quiz and laboratory under the same instructor—gives greater unity to the teaching. It also gives a desirable flexibility in distribution of time between laboratory and quiz, depending on the nature of the subject matter.

c. The use of classroom and laboratory space and of students' time is more efficient under the new schedule.

4. Proposals to Improve Undergraduate Curricula in Physics

a. A proposal was made to increase the credit from 3 to 4 hours in certain basic, non-laboratory, 300-level courses in the engineering physics curriculum. The proposal was rejected by the College Policy Committee because the courses meet three times a week instead of four.

The department believes that the most important part of the training in engineering physics is provided by a relatively small number of intensive and thorough courses in fundamental physics. The courses in question, including theoretical mechanics (2 semesters), thermodynamics and atomic physics, cannot be adequately mastered if each is considered only 1/6 of the schedule of 18 hours per semester which an engineering student must maintain. The credit should be adjusted to the level of difficulty and time required to master the subject, rather than to the number of meetings per week. The students are sufficiently mature that their mastery of the subject is accomplished more at the study table than in the lecture room.
b. A proposal was made to the College of Liberal Arts and Sciences that a curriculum in physics be described in detail in the catalog to encourage and assist LAS students to plan a major in physics. The main point is to get physics majors started early in the required long sequences of mathematics and physics. Although final action has not been taken, the LAS College Policy Committee has expressed considerable alarm over a curriculum which is half mathematics and physics, even though it also meets all of the requirements of the LAS general curriculum.

It is discouraging, amidst a great volume of generalized discussion of improvements in education and teaching to get such a cold reception to sound, concrete proposals which meet definite educational needs.
III. RESEARCH

Nuclear physics and physics of solids are the two general fields of greatest concentration in research activity in the department. Each has a diversified program of experimental research and a strong group working on related theoretical aspects. Smaller programs are established in cosmic rays, interaction of light with complex molecular or biological systems, and electrode physics.

Nuclear physics at Illinois includes the following major subjects, most of which involve a number of separate investigations.

1. Photonuclear effects studied with the 22 Mev and 350 Mev betatrons, including photo-production of mesons at high energies.

2. Nuclear reactions, energy levels and decay schemes studied through effects produced by cyclotron or betatron radiation, or neutron radiation in AEC reactors.

3. Role of neutrino in beta-ray emission.


5. Nuclear alignment in crystals at very low temperatures (less than 0.1° absolute).

6. Nuclear magnetic resonance: fundamental processes and applications to study of properties of matter.
7. Billion-volt accelerator design. Professors Kerst, Snyder, and Kruger, in association with a group organized by seven midwest universities are attacking the theoretical and design problems of a 20-30-billion volt "strong-focussing" accelerator. Professor Kruger has recently been elected chairman of the Midwest University Research Association whose first goal is to design and secure financial support for a large accelerator to be located in the midwest, for the use of the participating institutions.

One index of the productive research is the number of Ph.D. theses completed by the graduate students. The 21 theses completed in 1953-54 are listed in Table II. Another index is the number of research publications by staff and students. This is shown by the last points plotted in Fig. 4, which also shows a comparison with recent years.

Physics of solids has a diversified program as can be seen by reference to Table III, items 2 through 13 where the subjects of investigation supported by a group of contracts are listed.

A summary of financial support and distribution of the interests of the staff and graduate students in the fields of research is shown in Table IV.
TABLE II

Ph.D. Theses Completed in 1953-54

Lew Allen - "Photodisintegration of Deuterium by 95 Mev X-Rays"

J.F. Aschner - "Self-Diffusion in Sodium and Potassium Chloride"

Myer Bloom - "Transient Induction Signals Associated With Pure Quadrupole Spectra"

G.R. Briggs - Alpha-Alpha Particle Scattering at 21.8 and 22.9 Mev"

H.N. Brown - "Radiations from Ho^{164}"

T.R. Carver - "Polarization of Nuclear Spins in Metallic Systems"

H.G. Cooper - "Changes in the Resistivity of Copper, Silver and Gold on Deuteron Irradiation at 10^6K"

F.S. Eby - "The Angular Distribution of Protons from (d,p) Reaction on Be^9, Ni^{14} and Zn^{68}"

D.F. Holcomb - "Nuclear Magnetic Resonance in Alkali Metals"

Harry Lustig - "The Phase-Shift Analysis of Nuclear Cross-Section Data"

B.H. Muller - "Nuclear Relaxation of Supercooled Liquids"

V.O. Nicolai - "Photodisintegration of Helium Above the Meson Threshold"

Ira Pullman - "The Radiations From Ce^{144}"

A.G. Redfield - "Hall Effect in Insulating Photo-Conductors"

George Salzman - "Born-Type Rigid Motion in Relativity"

D.S. Selengut - "Quantization of Absorber Theory of Radiation"

Abraham Sosin - "The Electrical Anisotropy Produced by Deformation of Aluminum Single Crystals at 4^0K"

L.P. Stephenson - "The Kinetics of Anodic Films"
TABLE II (Cont'd.)

K.J. Teegarden - "Photoconductivity in Alkali Halide Crystals"

C.T. Tomizuka - "Diffusion of Cadmium, Indium and Tin in Single Crystals of Silver"

E.A. Whalin - "Photodisintegration of Deuterium by 165 Mev X-Rays"
Fig. 4

Physics Department Research Publications

--- Articles in Scientific Journals

--- "Letter to Editor" of Scientific Journals

<table>
<thead>
<tr>
<th>Year</th>
<th>Articles in Scientific Journals</th>
<th>&quot;Letter to Editor&quot; of Scientific Journals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1946-47</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>1947-48</td>
<td>22</td>
<td>21</td>
</tr>
<tr>
<td>1948-49</td>
<td>31</td>
<td>14</td>
</tr>
<tr>
<td>1949-50</td>
<td>41</td>
<td>20</td>
</tr>
<tr>
<td>1950-51</td>
<td>63</td>
<td>25</td>
</tr>
<tr>
<td>1951-52</td>
<td>56</td>
<td>30</td>
</tr>
<tr>
<td>1952-53</td>
<td>57</td>
<td>15</td>
</tr>
<tr>
<td>1953-54</td>
<td>64</td>
<td>16</td>
</tr>
</tbody>
</table>
TABLE III
Government Contracts in the Physics Department

<table>
<thead>
<tr>
<th>Contract No.</th>
<th>Subject and Principal Investigator</th>
<th>Est. Yearly Amt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>N6or1-071(01)</td>
<td>Nuclear Physics - F.W. Loomis</td>
<td>$419,000</td>
</tr>
<tr>
<td>Nonr 177(00)</td>
<td>Exptl. Research on Plastic Deformation - J.S. Koehler</td>
<td>16,000.</td>
</tr>
<tr>
<td>AT(11-1)-182</td>
<td>Exptl. Research on Radiation Damage - J.S. Koehler</td>
<td>100,000.</td>
</tr>
<tr>
<td>AF18(600)-689</td>
<td>Theoretical Research in Physics of Solids - F. Seitz</td>
<td>15,500.</td>
</tr>
<tr>
<td>NSF- Grant 456</td>
<td>Photo-Production of Pi Mesons - D.W. Kerst</td>
<td>6,000.</td>
</tr>
<tr>
<td>NSF- Grant 793</td>
<td>Midwest Accelerator - Kerst</td>
<td>3,000.</td>
</tr>
</tbody>
</table>

Total | $707,609.
TABLE IV.

RESEARCH—Financial Support and Distribution of Staff and Student Interests

<table>
<thead>
<tr>
<th>Field</th>
<th>U. of Ill. Contract Support</th>
<th>Staff Interested in Field</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Specific Support (Annual Rate)</td>
<td>Senior</td>
</tr>
<tr>
<td>Nuclear physics</td>
<td>29,083 (Physics Betatron) 400,000</td>
<td>20</td>
</tr>
<tr>
<td>Physics of Solids</td>
<td>17,100 (Physics Station) 280,000</td>
<td>10</td>
</tr>
<tr>
<td>Cosmic Rays</td>
<td>11,200 (Research Board) 19,000 1</td>
<td>1</td>
</tr>
<tr>
<td>Electrode Physics</td>
<td>---- 9,500 1</td>
<td>----</td>
</tr>
<tr>
<td>Bio-physics</td>
<td>---- ---- 1</td>
<td>----</td>
</tr>
</tbody>
</table>

Contract indirect cost funds allocated to the department (about $36,000 for the year) are assigned to research projects in greatest need of additional support.
RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name: Abrahams, Elihu
Title: Research Associate

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

American Physical Society, Detroit, March, 1954

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Electron-Electron Scattering in Alkali Metals
Review of Ferromagnetic relaxation processes.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Electronic Spin Resonance Line Width in Metals. (With C. Kittel)

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name  Allen, J. S.
Title  Professor

New degree, name institution granting

Membership in technical societies and fraternities  American Physical Society (Fellow)

Attendance at meetings of technical societies


MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Electron-Neutrino Angular Correlation in the Decay of Neon 19.-- with Donald R. Maxson.

ADDRESS — Title, where given, and date

OTHER PROFESSIONAL ACTIVITIES, INCLUDING SUMMER WORK

Consultant, Los Alamos Scientific Laboratory, June 15 to August 18, 1953.
Name: Almy, G. M.

Title: Professor of Physics, Associate Head of Department

New degree, name institution granting:

Membership in technical societies and fraternities:

American Physical Society (Fellow)

Attendance at meetings of technical societies:

American Physical Society; Chicago, November 1953
Washington, April 1954

Membership on Committees:

College

University:

Senate Committee on Honorary Degrees
Graduate College Executive Faculty Committee on Fellowships -- Chairman
University Patent Committee
New Chemistry Department Head
New Dean of L.A.S. College

Technical societies:

Research Completed This Year or In Progress
Photoproteons from Mo$^{100}$ and Mo$^{92}$. (with W. A. Butler) Physical Review$^{89}$, 893A (1953); $^{91}$, 58-65 (1953).

Other Professional Activities, Including Summer Work
RECORD OF GENERAL ACTIVITIES
May 1, 1953 to April 30, 1954

Name Ascoli, Giulio
Title Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities
    American Physical Society
    American Institute of Physics

Attendance at meetings of technical societies
    Cosmic Ray Symposium sponsored by National Science Foundation
    at Duke University, November 1953.

MEMBERSHIP ON COMMITTEES

College
    Young Engineering Teachers

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

    Research on particles produced by cosmic rays in photographic
    plates exposed at high altitudes is in progress.

None

Other Professional Activities, Including Summer Work
Name Axel, Peter

Title Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities

Attendance at meetings of technical societies

American Physical Society, Chicago November 1953
New York C. Jan., 1954

MEMBERSHIP ON COMMITTEES

College
High School Relations

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Photonuclear Effect; particularly in Zr$^{90}$, Mo$^{92}$
Miscellaneous Radioactivity Studies
PUBLICATIONS — Co-author, Title, Journal or Publisher, Volume, Page, and Date


Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

Brookhaven National Laboratory
RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name Bardeen, John
Title Professor

New degree, name institution granting
Membership in technical societies and fraternities American Physical Society (Fellow)
  Z Xi, Tβw, EKN

Attendance at meetings of technical societies
  Int. Conf. on Theoretical Physics, Tokyo and Kyoto, Japan Sept. 1953
  Int. Conf. on Low Temp. Physics, Houston, Texas Dec. 1953
  American Physical Society, Detroit & Ann Arbor, Michigan March 1954

MEMBERSHIP ON COMMITTEES

College
  Chm., Advisory Committee, Grad. Summer School on Semiconductor and Transistor Elect.
  Chm., Journal Club Committee, Physics Dept.
  Qualifying Exams, Phys. Dept.

University
  A number of committees for prelim, final Ph.D. exams.

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Various problems in theory of superconductivity and semiconductors.
  Motorola grant for research on semiconductors. Crystal growing apparatus completed. Studies on theory of surface conductance in barrier layers, diffusion, plastic properties of germanium underway.
  ONR task 40 (EE Dept.) Nine research problems on semiconductors, several publications.
Several things in press, but nothing with publication dates between April 30, 1953 and May 1, 1954.

Addresses — Title, where given, and date

Surface Properties of Semiconductors, Tokyo, Japan, Sept. 1953
Semiconductors and Transistor Electronics, Osaka, Japan, Sept. 1953
Semiconductors and Transistor Electronics, Sendai, Japan, Sept. 1953
Surface Barrier Effects in Semiconductors (Buckley Prize Address), American Physical Society, Ann Arbor, Michigan, March 1954

Other Professional Activities, Including Summer Work
Name: Bartlett, J. H.
Title: Professor

New degree, name institution granting:

Membership in technical societies and fraternities:
- American Physical Society (Fellow)
- Electrochemical Society
- Marine Biological Laboratory (Woods Hole, Mass.)
- Sigma Xi

Attendance at meetings of technical societies:
- American Physical Society, New York City, Feb. 1, 1954
- New York Acad. of Sciences, Nov. 1953

**MEMBERSHIP ON COMMITTEES**

College
- Library
- Graduate Language

University

Technical societies

**RESEARCH COMPLETED THIS YEAR OR IN PROGRESS**
- Kinetics of Anode Films (in progress)
- Exact Solution of Helium Wave Equation (in progress)
- Mechanism of Radiation Damage in Solids (in progress)
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

Brookhaven National Laboratory June 10—August 10, 1953
Marine Biological Laboratory Aug. 10—Sept. 7, 1953
Name Becker, R. A.
Title Associate Professor

New degree, name institution granting

Membership in technical societies and fraternities

- American Institute of Physics
- American Physical Society
- Sigma Xi

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College
- Committee on the Improvement of Teaching; Freshman Lectures

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

- Study of the disintegration scheme of $^{161}$Ho. (completed)
- Search for fluorescent radiation (i.e. fluorescent nuclear gamma rays) produced from betatron bombardment (in progress).
- Study of gamma-2n activities on the 300 Mev Machine (in progress).
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date


Addresses — Title, where given, and date

"Radiations from $^{164}$Ho." American Physical Society, Washington, D. C., April, 1954.

Other Professional Activities, Including Summer Work

Full time research appointment at betatron
Visit to Physics Department, University of Washington, summer 1953.
Text "Introduction to Theoretical Mechanics" in galley proof stage; being published by McGraw-Hill.
Name      Bernardini, G.
Title     Research Professor
New degree, name institution granting
Membership in technical societies and fraternities
    Acc. Naz. Dei Lincei; Acc. di Bologna; Acc. Scienze Bari;
    American Physical Society, (Fellow)

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

Research Completed This Year or in Progress

Photoproduction of \( \pi^+ \) mesons from Hydrogen near Threshold (with E. L. Goldwasser) (Phys. Rev.)

Determination of the coupling constant between pions and nucleons—Photopions by He (with R. Reitz).
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

**Fisica Sperimentale, XIII Ed., 1953-54. Libreria Veschi, Roma.**

Photoproduction of $\pi^+$ near threshold (with E. L. Goldwasser).

Addresses — Title, where given, and date

Photomesons near the production threshold—invited paper at the
*A.P.S.*, Nov. 28, 1953.


Several colloquia on photopions and scattering of pions at:
Madison, Wisc.; Bloomington, Ind.; Paris (France); Turni, Roma (Italy); Washington University—St. Louis, etc.

Other Professional Activities, Including Summer Work

Summer session at the Internation School of Physics, Varenna, Italy. Some Lectures in Universities in Europe.
Name: Blatt, F. J.
Title: Research Associate

New degree, name institution granting: Ph.D., University of Washington

Membership in technical societies and fraternities:
American Physical Society

Attendance at meetings of technical societies:
American Physical Society  Chicago, November 27, 1953
American Physical Society  Detroit, March 17, 1954

Membership on Committees:

College

University

Technical societies

Research completed this year or in progress:
Thermomagnetic Properties of Thin Metallic Films (completed)
On the Diffusion on the Fermi Surface and the Conductivity of Metals (completed)
Effect of Radiation Damage on Electrical Conductivity (in progress)
Infrared Absorption in Germanium (in progress)
Thermoelectric Power of Ideal Metals (in progress)
PUBLICATIONS — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name  Carver, T. R.
Title  Instructor
New degree, name institution granting  Ph.D. University of Illinois
Membership in technical societies and fraternities
   Society of the Sigma Xi
   American Physical Society
Attendance at meetings of technical societies
   American Physical Society, Detroit, March 1954

MEMBERSHIP ON COMMITTEES

College
University
Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS
   Low field conduction electron spin resonance in metals
   Polarization of nuclei in metals
   Electron susceptibility measurements
Polarization of Nuclear Spins in Metals (with C. P. Slichter)

Other Professional Activities, Including Summer Work
Name Chandrasekhar, B. S.
Title Research Associate
New degree, name institution granting

Membership in technical societies and fraternities

Member of the Institute of Physics, London, and the Physical Society, London.

Attendance at meetings of technical societies

International Low Temperature Conference at Houston, Texas (Dec. 1953)
American Physical Society at Detroit, Michigan (March 1954)

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Research is in progress on the electrical resistivity at low temperatures of an aluminum alloy (S 63).

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name    Chew, G. F.
Title   Associate Professor

New degree, name institution granting

Membership in technical societies and fraternities

- American Physical Society (Fellow)
- Sigma Xi
- Federation of American Scientists

Attendance at meetings of technical societies

- International Cosmic Ray Congress, Bagneres de Bigorre, France, July 1953.
- Washington meeting of American Physical Society, April, 1954.

MEMBERSHIP ON COMMITTEES

College

- Physics library, chairman.
- Physics colloquium, chairman.
- Physics advisory committee.

University

Technical societies

- F.A.S. Passport Committee, chairman.

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

- Renormalization of cut-off meson theory.
- Perturbation method for cut-off meson theory.
- Pion-nucleon scattering in cut-off meson theory.
- Photo-pion production in cut-off meson theory.
- Nucleon magnetic moments in cut-off meson theory.
- A variational approximation for scattering problems.


Addresses — Title, where given, and date


"The Current Status of the Yukawa Theory; Iowa State College Physics Colloquium, November 1953.

"Fundamental Particles", Illinois meeting of the American Association of Physics Teachers, October 1953.

Other Professional Activities, Including Summer Work

Three weeks consulting at the Brookhaven National Laboratory, June, 1953.

Two months of lecturing (Fulbright) at the Summer School for Theoretical Physics, Les Houches, France, July-August, 1953.
Name  Duffield, R. B.

Title  Associate Professor of Physics (and of Physical Chemistry)

New degree, name institution granting

Membership in technical societies and fraternities
  American Physical Society
  American Chemical Society
  Sigma Xi

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS
Other Professional Activities, Including Summer Work

On leave of absence at Brookhaven National Laboratory, I Semester 1953-54.

On sabbatical leave at Zurich, Switzerland, II Semester, 1953-54.
Name: Eby, F. S.
Title: Research Associate

New degree, name institution granting Ph.D. in physics, University of Illinois

Membership in technical societies and fraternities
- American Physical Society
- Tau Beta Pi
- Sigma Tau
- Pi Mu Epsilon
- Sigma Xi

Attendance at meetings of technical societies

American Physical Society Meetings: Washington, D.C., May 1, 2, 1953
Chicago, Illinois, Nov. 27, 28, 1953

Research Completed This Year or in Progress

(d, p) (Nuclear) Reactions on Be\(^9\), N\(^{14}\), Zn\(^68\), Cu\(^{63}\), Cu\(^{65}\), Cd\(^{111}\)
Properties of NaI(Tl) Scintillation Crystals.


Other Professional Activities, Including Summer Work
Name: Frauenfelder, Hans
Title: Research Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society
Schweizerische Physikalische Gesellschaft

Attendance at meetings of technical societies

Meeting of the American Physical Society Washington, D. C., May 1953
Chicago, Illinois Nov. 1953

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Investigation of directional correlation of nuclear radiations
and influence of extranuclear fields.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date


The Directional Correlation of the Pb\textsuperscript{204} \(\gamma-\gamma\) Cascade (with J. S. Lawson, W. Jentschke, G. DePasquali). Phys. Rev. 92, 1241-1244 (1953).


Addresses — Title, where given, and date


Other Professional Activities, Including Summer Work
Name Gibbs, Peter
Title Instructor

New degree, name institution granting
Membership in technical societies and fraternities
American Physical Society

Attendance at meetings of technical societies
American Physical Society, Detroit, March 18-20, 1954.

MEMBERSHIP ON COMMITTEES

College
Chairman, Solid State Seminar

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS
Theory for Viscosity of liquid Helium.
Resistance due to scattering of Electrons by grain Boundaries.
Addresses — Title, where given, and date

"Liquid Helium; University of Utah, June 15, 1953."

"Superconductivity; University of Utah, June 16, 1953."

Other Professional Activities, Including Summer Work
Name Gnaedinger, R. J.
Title Research Associate

New degree, name institution granting

Membership in technical societies and fraternities
   American Physical Society
   American Chemical Society
   Sigma Xi

Attendance at meetings of technical societies
   American Chemical Society, Chicago, November, 1953.
   American Physical Society, Detroit, March, 1954.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

Research Completed This Year or in Progress

Work on the dilute solutions of antimony in silver will be completed by this fall.
COLLEGE OF ENGINEERING — UNIVERSITY OF ILLINOIS

RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name  Goldwasser, E. L.
Title  Research Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities
  American Physical Society
  Sigma Xi

Attendance at meetings of technical societies
  American Physical Society  Washington, D. C.  May 1953
  American Physical Society  New York City  Jan. 1954
  American Physical Society  Chicago, Illinois  Nov. 1953
  American Physical Society  Washington, D.C.  April 1954

MEMBERSHIP ON COMMITTEES

College

University

Technical societies
  Sigma Xi

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Concluding work on "photo-production of $\pi^+$ mesons near threshold". Papers written and in process. Completed work on "photodisintegration of helium at high energy." Started work on experiment investigating $\pi^0$ mesons from helium and the nucleon spin-flip in the photo-meson production process.


Addresses — Title, where given, and date

Name: Hanson, A. O.
Title: Professor

New degree, name institution granting

Membership in technical societies and fraternities
   American Physical Society

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College

University
   Radiation Hazards Subcommittee of the University Research Board.

Technical societies
   On Editorial Board of "Review of Scientific Instruments"

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

   Photo disintegration of Deuterium by High Energy X-rays.
   Electrodisintegration of Copper.


Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

Name   Hill, R. D.

Title  Associate Professor

New degree, name institution granting

Membership in technical societies and fraternities

   American Physical Society (Fellow)
   Institute of Physics, London (Fellow)

Attendance at meetings of technical societies

   MEMBERSHIP ON COMMITTEES

   College

   University

   Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

   at Brookhaven National Laboratory


Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

On sabbatical leave.
**RECORD OF GENERAL ACTIVITIES**

*May 1, 1953 to April 30, 1954*

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**Name** Hodes, Isidore  
**Title** Research Associate  
**New degree, name institution granting** Ph.D., University of Chicago  
**Membership in technical societies and fraternities**  
- American Physical Society

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**Attendance at meetings of technical societies**  
- American Physical Society, Chicago, November 1953.

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**MEMBERSHIP ON COMMITTEES**

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**College**  
**University**  
**Technical societies**

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**Research Completed This Year or in Progress**

**In Progress:**

- a) Theoretical investigation of photo disintegration of deuteron.  
- b) Preparation of an Illiac program for computation of angular distribution of electron-electron bremsstrahlung.
PUBLICATIONS — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Holcomb, D. F.
Title: Research Associate

New degree, name institution granting: Ph.D., University of Illinois

Membership in technical societies and fraternities:

American Physical Society
Sigma Xi

Attendance at meetings of technical societies:
American Physical Society; Chicago, November 1953; Detroit, March 1954.

Research Completed This Year or in Progress:


Addresses — Title, where given, and date

Name: Hulsizer, R. I.

Title: Research Associate Professor

New degree, name institution granting

Membership in technical societies and fraternities

    American Physical Society
    Sigma Xi

Attendance at meetings of technical societies

    National Science Foundation Conference on Cosmic Rays at Duke University, December, 1953.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

    American Society for Engineering Education
    Committee on annual convention at University of Illinois

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

    Research in progress:  Search for negative protons created by impact of cosmic rays on terrestrial matter.
**Publications** — Co-author, Title, Journal or Publisher, Volume, Page, and Date

*Classified reports published by the Controls Systems Laboratory*

**Addresses** — Title, where given, and date

**Other Professional Activities, Including Summer Work**
Name: Jan, Jean-Pierre
Title: Research Associate

New degree, name institution granting
Membership in technical societies and fraternities

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Jentschke, W. K.
Title: Research Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities
   American Physical Society (Fellow)

Attendance at meetings of technical societies

   American Physical Society: Chicago, November 1953
   Cambridge, Mass., February 1954
   Washington, D.C., April 1954

Membership on Committees

College

University

Technical societies

Research Completed This Year or in Progress

   The d-p reaction on $^{14}$N, $^9$Be and $^{46}$Zn.
   Coulomb excitation of Nuclei.
   Measurement of the magnetic moment of excited states.


Addresses — Title, where given, and date

Other Professional Activities, including Summer Work
RECORD OF GENERAL ACTIVITIES
May 1, 1953 to April 30, 1954

Name: Känzig, Werner
Title: Research Assistant Professor
New degree, name institution granting: venia legendi: Swiss Federal Institute of Technology, Zürich.

Membership in technical societies and fraternities
American Physical Society
Swiss Physical Society

Attendance at meetings of technical societies
Swiss Physical Society, Geneva, Switz., May 2, 1953
American Physical Society: Chicago, November 1953

MEMBERSHIP ON COMMITTEES

College
University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS
Behavior of Small Ferroelectric Particles
Antiferroelectricity of (NH₄)₂ H₃IO₆
Influence of plastic flow on colour centers in alkali-halides.
**Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date**


**Addresses — Title, where given, and date**


**Other Professional Activities, Including Summer Work**
Name: Kerst, D. W.
Title: Professor

New degree, name institution granting

Membership in technical societies and fraternities

National Academy of Science
American Physical Society
Sigma Xi

Attendance at meetings of technical societies

Midwest Accelerator Group, Brookhaven National Lab., July, 1953
Midwest Accelerator Group, Madison, Wis., August 1953.
International Accelerator Conference, Geneva, Switz., October 1953
American Physical Society, New York, Jan. 1954
Ad Hoc Advisory Panel on Ultrahigh Energy Nuclear Accelerators, Washington, D.C.

Membership on Committees

College
Engineering College Nuclear engineering.

University
Phi Kappa Phi Scholarship Committee—1953.

Research Completed This Year or in Progress

My connection with the projects listed below has been mainly in initiating the work and participating in the early tests:

- Lengthening betatron x-ray burst on both betatrons
- Effect of target thickness on the shape of the Cu\(^{65}\)(\(t\),\(n\))
- Precision measurement of field shape and magnitude at different energies of the 300 Mev betatron (with the crew of engineers)
- X-ray monochromator (with Goldemberg)
- Nuclear absorption tests (with Spicer)
- Midwest accelerator project using digital computer (with J.N. Snyder)
PuBLICATIONS — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Electrodisintegration of Cu$^{63}$. (with M.B. Scott and A.O. Hanson) 

Determination of photo-flux energies between 150 and 300 Mev. 

The study of the non-linear alternating gradient synchrotron using a digital computer. (with J.L. Powell and J.N. Snyder) 
(In press)

Addresses — Title, where given, and date

Colloquium at Ames, Iowa, October, 1953.


Other Professional Activities, Including Summer Work
Name Koehler, J. S.

Title Professor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

American Physical Society: Washington, D.C., May 1953
Detroit-Ann Arbor, March 1954.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Ph.D. Thesis—A. Sosin. The electrical anisotropy produced by deformation of aluminum single crystals at 4°K.

Ph.D. Thesis—H.G. Cooper. Changes in the Resistivity of copper, silver and gold on deuteron irradiation at 10°K.

(Continued)
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

(Research in progress—continued:

J.W. Henderson—Energy stored in copper and gold crystals by deformation at 77°K.

G.S. Baker—The growth and physical properties of one micron tin whiskers

T.S. Noggle—Slip Structures on deformed aluminum crystals

D.N. Beshers—Elastic constants, yield stress, and damping of dilute copper gold alloys

J.W. Kauffman—The quenching in of lattice vacancies in pure gold.


Theory of initial stress-strain curves in face-centered metals.

Acta Metallurgica 1, 377L (1953).


Addresses — Title, where given, and date


Other Professional Activities, Including Summer Work
Name Koester, L. J.

Title Research Associate

New degree, name institution granting

Membership in technical societies and fraternities

   American Physical Society
   Sigma Xi

Attendance at meetings of technical societies

   American Physical Society; Rochester, N.Y., June 1953
   Chicago, November 1953.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

 RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

   Photoproduction of \( \pi^0 \) mesons in hydrogen (nuclear emulsion experiment now being scanned)

   Threshold and angular distribution of neutral photomesons in hydrogen (counter experiment in progress).
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name Kruger, P. G.

Title Professor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society
American Association of Physics Teachers
Phi Kappa Phi
Sigma Xi

Attendance at meetings of technical societies


MEMBERSHIP ON COMMITTEES

College Committee on nuclear power engineering.

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Uptake of boron dyes in glioblastoma multiforme in Mice.

*Other Professional Activities, Including Summer Work*

Midwest accelerator conference and associated activities involved in the organization of the Midwest University Research Council.

Member of Council Executive Board, Argonne National Laboratory

Member of the Argonne Advisory Committee, Argonne National Lab.
Name: Lavatelli, L. S.
Title: Assistant Professor

New degree, name institution granting
Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

American Physical Society: New York, January 1954

MEMBERSHIP ON COMMITTEES

College: Physics Dept. Society Committee (Chairman)

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Military project "Quick Fix". Classified and confidential.
Control Systems Laboratory Report R-43. (with D. Lazarus) Project "Quick Fix".

Summary report of a short-term improvement program for the tactical aircraft control and warning system. (Title unclassified; report secret), June 1953.
RECORD OF GENERAL ACTIVITIES
May 1, 1953 to April 30, 1954

Name  Lazarus, David
Title  Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities
  American Physical Society
  Sigma Xi

Attendance at meetings of technical societies

  American Physical Society: November 1953, Chicago
  January 1954, New York
  March 1954, Detroit-Ann Arbor

MEMBERSHIP ON COMMITTEES

  College  Social

  University

  Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

  Program on diffusion in metals.


Other Professional Activities, Including Summer Work
Name         Longacre, Andrew
Title        Professor
New degree, name institution granting
Membership in technical societies and fraternities

American Assn. for Advance. of Science
American Physical Society
American Assn. of Physics Teachers
Science Masters Great Britain

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITtees

College

University

Technical societies

RES RECH Complete d This Year or in Progress

All classified at Control Systems Laboratory
CLASSIFIED REPORTS OF CONTROL SYSTEMS LABORATORY

ADDRESSES — Title, where given, and date

Classification

OTHER PROFESSIONAL ACTIVITIES, INCLUDING SUMMER WORK

Classification
Name: Loomis, F. W.

Title: Head of Department of Physics, and Director of Control Systems Lab.

New degree, name institution granting

Membership in technical societies and fraternities:
- American Physical Society (Fellow)
- Optical Society of America (Fellow)
- American Assn. for Advance. of Science (Fellow)
- National Academy of Sciences
- Amer. Assn. of Univ. Professors
- Amer. Assn. of Physics Teachers
- Illinois Academy of Science

Attendance at meetings of technical societies:
- American Physical Society, Chicago, November 1953
- New York, January 1954
- Washington, D.C., April 1954
- National Academy of Science, Washington, D.C., April 1954

Membership on Committees:
- College Executive Committee, College of Engineering

University:
- National Science Found. Fellowships (Nat. Acad. Sciences)
- Board of Sponsors, Bull. of Atomic Scientists
- Technical societies:
  - Scientific Advisory--(Ballistic Research Lab.)
  - Publication Policy--(American Physical Society)
  - Nominating Committee--(Amer. Institute of Physics)

Research Completed This Year or in Progress
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Low, F. E.
Title: Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities

- American Physical Society
- Sigma Xi
- Phi Beta Kappa

Attendance at meetings of technical societies

American Physical Society: Chicago, November 1953.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

(With M. Gell-Mann) Quantum electrodynamics at small distances. (In press)
The Non-relativistic theory of scattering. (Ready to go to press) P. Mod. Phys.
Relativistic wave functions. (in progress)
Mobility of slow electrons in polar crystals. (with D. Pines)

The motion of slow electrons in a polar crystal. (with D. Pines and T. D. Lee) 
Phys. Rev. 90, 297-302 (1953); 90, 382A (1953).

Bremsstrahlung at high energies. (With H. A. Bethe and L. Maximon)

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Lyman, E. M.
Title: Professor

New degree, name institution granting

Membership in technical societies and fraternities

- American Physical Society
- American Association for the Advancement of Science
- American Association of Physics Teachers
- American Association of University Professors
- Sigma Xi

Attendance at meetings of technical societies

- American Physical Society: Chicago, November, 1953
  New York, January 1954

MEMBERSHIP ON COMMITTEES

College: Scholarships

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

One-half time on classified research at Control Systems Laboratory
PUBLICATIONS — Co-author, Title, Journal or Publisher, Volume, Page, and Date

ADRESSES — Title, where given, and date

OTHER PROFESSIONAL ACTIVITIES, INCLUDING SUMMER WORK
RECORD OF GENERAL ACTIVITIES
May 1, 1953 to April 30, 1954

Name  Machlup, Stefan
Title  Research Associate

New degree, name institution granting
Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

American Physical Society:  Chicago, November 1953
                        New York, January 1954
                        Detroit-Ann Arbor, March 1954.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Some mathematical aspects of noise in semiconductors. (completed)
Theory of self-diffusion in alkali metals. (in progress)


Name: Mapother, D. E.
Title: Assistant Professor

New degree, name institution granting:

Membership in technical societies and fraternities:

- American Physical Society
- American Association of Physics Teachers
- American Association of University Professors
- Sigma Xi

Attendance at meetings of technical societies:


Membership on Committees:

College: Student Petitions Committee 1953-54

University

Technical societies

Research Completed This Year or in Progress:

Superconducting properties of pure aluminum
Effect of Hydrostatic pressure on superconducting transition in tin
Effect of precipitation hardening on superconductivity in aluminum
Tabulation of magnetic field values for thick solenoids (with J.N. Snyder)
Nucleation of superconducting phase in aluminum, zinc, and gallium.
Addresses — Title, where given, and date

"Supercooling in the Superconducting Phase Transition of Pure Aluminum"  


Other Professional Activities, Including Summer Work

Investigations of superconductivity for research contract with Office of Ordnance Research. Work done in Physics Department during summer of 1953.
RECORD OF GENERAL ACTIVITIES
May 1, 1953 to April 30, 1954

Name Maurer, R. J.
Title Professor

New degree, name institution granting
Membership in technical societies and fraternities

American Physical Society (Fellow)

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College "Careers" Committee

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Properties of Excitons in Alkali Halide Crystals
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

ADDRESSES — Title, where given, and date

"Imperfections in Crystal Structure". Wayne University, Detroit, March 8, 1954.

Other Professional Activities, Including Summer Work

Consultant, Naval Ordnance Laboratory, White Oak, Md.
Consultant, National Science Foundation, August 1953.
Name: Meagher, R. E.
Title: Research Professor

New degree, name institution granting

Membership in technical societies and fraternities
  American Physical Society
  Institute of Radio Engineers
  Association for Computing Machinery
  Sigma Xi
  Phi Kappa Phi

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College

University: Executive Committee, Digital Computer Laboratory, Graduate College


Research Completed This Year or in Progress

I have been directing research on: computer circuits using transistors, magnetic core memories.

Addresses — Title, where given, and date


Other Professional Activities, Including Summer Work

I have been directing the engineering work in connection with the Illiac, including work on a magnetic drum storage unit.
Name: Norberg, R. E.
Title: Assistant Professor

New degree, name institution granting: 

Membership in technical societies and fraternities:

American Physical Society.

Attendance at meetings of technical societies:


MEMBERSHIP ON COMMITTEES:

College:

University:

Technical societies:

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS:

Nuclear magnetic resonance in alkali metals. (with D. F. Holcomb)

Transient induction signals associated with pure quadrupole spectra. (with M. Bloom)
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date


Addresses — Title, where given, and date


Other Professional Activities, Including Summer Work

Control Systems Laboratory — classified research and development.
Name Nordsieck, A. T.
Title Professor

New degree, name institution granting
Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College Numerous Student Examination Committees

University Numerous student examination committees

Technical societies

Board of Editors, The Physical Review.

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

Half-time on classified work in Control Systems Laboratory
COLLEGE OF ENGINEERING — UNIVERSITY OF ILLINOIS

RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name  R. F. Paton

Title  Associate Professor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society (Fellow)
Amer. Assn. for Advance. of Science (Fellow)
American Association of Physics Teachers
Illinois Academy of Science
Sigma Xi

Attendance at meetings of technical societies

Illinois Academy of Science, Galesburg, May 1953
Amer. Assn. Physics Teachers, Pittsburgh, June 1953
Illinois Section of A.A.P.T., Urbana, October 1953
(Chairman of Committee on Arrangements)
National Science Teachers Assn., Chicago, April 1954.

MEMBERSHIP ON COMMITTEES

College  Program Committee

University  Preparation of Science Teachers

Technical societies

Science Talent Search. - Illinois Academy of Science
Nominating Committee - Sigma Xi
National Secretary - Amer. Assn. Physics Teachers

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date


Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Pines, David
Title: Research Assistant Professor

Membership in technical societies and fraternities

- American Physical Society
- Sigma Xi

Attendance at meetings of technical societies

- American Physical Society: Chicago, November, 1953

Membership on Committees

College

University

Technical societies

Research Completed This Year or in Progress

- Study of role of electron interaction on various metallic phenomena, including correlation energy, specific heat, work function, paramagnetic and diamagnetic susceptibility, and x-ray band-width.
- Electron spin relaxation times in alkali metals (with Y. Yafet)
- The role of electron interaction in conductivity and superconductivity (with J. Bardeen)
- The motion of slow electrons in polar crystals (with F. Low and T. D. Lee)
- A collective description of nuclear interactions, and the giant dipole resonance (with M. Ferentz and M. Gell-Mann)
The Motion of Slow Electrons in a Polar Crystal. (with T. D. Lee and E. P. Low) Phys. Rev. 90, 297–302 (1953); 90, 382A (1953).


Addresses — Title, where given, and date


Name Rawcliffe, R. D.
Title Assistant Professor
New degree, name institution granting
Membership in technical societies and fraternities
  American Physical Society
  Sigma Xi

Attendance at meetings of technical societies
  American Physical Society, Chicago, November 1953

MEMBERSHIP ON COMMITTEES
  College Physics Dept., Building and Power Committee
  Physico-Chemical-Biology Committee

University

Technical societies

Research Completed This Year or in Progress
  Photochemical reactions related to photosynthesis
  Development and Application of the ultraviolet microspectrophotometer
Name: Robinson, C. S.

Title: Research Associate Professor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society
American Association for the Advancement of Science

Attendance at meetings of technical societies

Washington, D.C., Apr. 29-May 1, 1954.

MEMBERSHIP ON COMMITTEES

College Arrangements Committee - ISA-ASEE Symposium on Instrument Education

University

Technical societies

Research Completed This Year or in Progress

Study of meson production by x-rays from 300 Mev betatron, using scintillation counter techniques.


Addresses — Title, where given, and date


Other Professional Activities, Including Summer Work

Informal program of assisting selected high school seniors to become interested in the study of physics. Students are selected from among those in Illinois who are winners or receive honorable mention in the Westinghouse Science Talent Search. This year five students visited the department, and had an opportunity to become acquainted with the research programs in physics and to discuss various problems related to attending college.
Name: Salzman, George
Title: Instructor

New degree, name institution granting: Ph.D. in Physics, Univ. of Illinois

Membership in technical societies and fraternities:
- Sigma Xi
- Pi Mu Epsilon
- American Physical Society
- Federation of American Scientists
- Reviewer for Applied Mechanics Reviews

Attendance at meetings of technical societies:
- American Physical Society: Chicago, November 1953
- New York, January 1954

Membership on Committees:
College
University

Technical societies

Research Completed This Year or in Progress:
- Born-type Rigid Motion in Relativity. (paper submitted to the Phys. Rev. (with A.H. Taub))
- Meson theory of neutron-electron interaction (with G.F. Chew)
Name  Schmitt, R. A.
Title  Instructor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society
American Chemical Society
Sigma Xi

Attendance at meetings of technical societies

Membership on Committees

College

University

Technical societies

Research Completed This Year or in Progress

Threshold fission studies of heavy elements such as uranium and thorium is now in progress. Cross-sections for the formation of selected masses in the photo-fission of uranium as a function of energy--in progress.
"Uranium photo-fission Yields". (with Nathan Sugarman)

Other Professional Activities, Including Summer Work
Name: Scott, M. B.
Title: Research Associate

New degree, name institution granting:

Membership in technical societies and fraternities:

American Physical Society

Attendance at meetings of technical societies:

Membership on committees:

College

University

Technical societies

Research completed this year or in progress:

Electro- and Photodisintegration of Cu63.

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name: Seitz, Frederick
Title: Professor

New degree, name institution granting

Membership in technical societies and fraternities
- American Academy of Science
- American Physical Society (Council member)
- National Academy of Sciences
- American Philosophical Society
- American Institute of Mining and Metallurgy Engineering
- Optical Society of America
- Sigma Xi

Attendance at meetings of technical societies

National Academy of Sciences, April 1954
American Physical Society: Chicago, November 1953
New York, January 1954
Detroit-Ann Arbor, March 1954
Washington, D.C., April 1954

MEMBERSHIP ON COMMITTEES


University: Research Board

Technical societies
- Chairman, Governing Board, American Institute of Physics

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Theory of Color Centers in the Alkali Halides.


Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

Half-time as Technical Director of Control Systems Laboratory, University of Illinois.
Name: Slichter, C. P.
Title: Assistant Professor

New degree, name institution granting:

Membership in technical societies and fraternities:
- American Physical Society (Fellow)
- Sigma Xi

Attendance at meetings of technical societies:

- American Physical Society: Chicago, November 1953
- Detroit-Ann Arbor, March 1954.

Membership on Committees:

College:
- Placement
- Engineering Analysis

University:

Technical societies:

Research Completed This Year or in Progress:
- Low field magnetic resonance of conduction electron spins in metals
- Microwave paramagnetic resonance
- Polarization of nuclear spins by Overhauser method
- Conduction electron spin susceptibility
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

in Metals.


A Note on the Fluorine Resonance Shifts. (with A. Saika)

Addresses — Title, where given, and date


"Polarization of Nuclear Spins by the Overhauser Method" Carnegie Institute of Technology, Fall 1953.

Other Professional Activities, Including Summer Work

Research at University of Illinois in Summer 1953.
Name  Slifkin, L. M.
Title  Research Assistant Professor
New degree, name institution granting
Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

American Physical Society: New York, January 1954
Detroit—Ann Arbor, March 1954.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Various intermetallic diffusion studies
Plasticity of Germanium
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Yield Pt.

Germanium Under Ultrasonic Stress. I. Anelastic Effects. II. Dynamics.

Diffusion of Antimony in Silver. (With E. Sonder and C. T. Tomizuka)

Self-Diffusion in Germanium. (With H. Letaw and W. M. Portnoy)


Addresses — Title, where given, and date

"Intermetallic Diffusion.": Univ. of Minn., February 1954
Michigan State College, March 1954
University of Florida, March 1954
Bell Telephone Labs., Feb. 1954.

Other Professional Activities, Including Summer Work
Name: Smith, J. H.

Title: Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities

American Physical Society

Attendance at meetings of technical societies

MEMBERSHIP ON COMMITTEES

College: Exhibits and Tours

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Preliminary work on correlated protons and neutrons in the high energy nuclear photoeffect. Completed. This work will probably be expanded and continued for a year or so.

Pulse height techniques for measuring low energy photoprotons were developed but no experiment yet completed.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
RECORD OF GENERAL ACTIVITIES

May 1, 1953 to April 30, 1954

Name  Snyder, J. N.
Title  Assistant Professor

New degree, name institution granting

Membership in technical societies and fraternities

Phi Beta Kappa
Sigma Xi
Pi Nu Epsilon
American Physical Society

Attendance at meetings of technical societies

American Physical Society:  Chicago, November 1953
Detroit-Ann Arbor, March 1954

MEMBERSHIP ON COMMITTEES

College  College Policy and Development
          Engineering Evaluation

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Complete:  Quantization of absorber theory of radiation (with D. S. Selengut
          Alpha-Alpha cross section analysis
          Solution of integral equations on a digital computer
          Solution of linear equations on a digital computer.

In progress:  Auger effect.  (with R. A. Rubenstein)
          Minimization of functions on a digital computer
          Solution of Laplace's equation on a digital computer.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work

Classified research at Control Systems Laboratory—summer 1953.
Name Thomson, R. M.
Title Research Associate
New degree, name institution granting
Membership in technical societies and fraternities

American Physical Society
Sigma Xi

Attendance at meetings of technical societies

American Physical Society, Detroit–Ann Arbor, March 1954.

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

Research Completed This Year or in Progress

Investigation into anisotropic properties of dislocations in crystals.


**Publications** — Co-author, Title, Journal or Publisher, Volume, Page, and Date

**Addresses** — Title, where given, and date

**Other Professional Activities, Including Summer Work**
Name  Tomizuka, C. T.

Title  Research Associate

New degree, name institution granting  Ph.D. in Physics, Univ. of Illinois, Feb. 1954.

Membership in technical societies and fraternities

- American Physical Society
- Physical Society of Japan
- Sigma Xi

Attendance at meetings of technical societies

- AEC Physical Metallurgy Conference, June 1953
- Midwest Solid State Conference, Oct. 1953
- American Physical Society:  Chicago, November 1953
  New York, January 1954
  Detroit-Ann Arbor, March 1954.

Membership on Committees

College

University

Technical societies

Research Completed This Year or in Progress

- Diffusion of Cd, In and Sn in Single Crystals of Silver (completed)
- Diffusion of Ru in Single Crystals of Silver (in progress)
- Time Dependence of Diffusion Coefficient in Silver
- Diffusion of In and Sb in Compound InSb.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Diffusion of Antimony in Silver. (with E. Sonder and L.H. Slifkin)

Addresses — Title, where given, and date

"Diffusion of Cd and In in Silver". AEG meeting, Robert Allerton Park, June 1953.


"Intermetallic Diffusion in Silver" American Physical Society, Detroit, March 1954.

Other Professional Activities, Including Summer Work
Name: Wheatley, J. C.
Title: Instructor

New degree, name institution granting

Membership in technical societies and fraternities

- American Physical Society
- Sigma Xi

Attendance at meetings of technical societies


MEMBERSHIP ON COMMITTEES

- College Student English

University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Completed: Measured magnetic moment of Co$^{60}$ and angular distribution of two $\gamma$-rays from Ni$^{60}$ from originally aligned Co$^{60}$

In progress: Measure magnetic moments and angular distributions from aligned Co$^{58}$, Co$^{57}$, and Co$^{56}$. Measure specific heat due to nuclear interactions in cobalt ammonium Tutton salt.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Yafet, Yako
Title: Research Associate

New degree, name institution granting:

Membership in technical societies and fraternities:

American Physical Society

Attendance at meetings of technical societies:

American Physical Society: New York, January 1954
Detroit-Ann Arbor, March 1954.

Membership on Committees:

College
University
Technical societies

Research Completed This Year or in Progress:

Estimate of the validity of a mobility calculation in the adiabatic approximation for a polaron. (Electron in polar crystal)

Spin-relaxation in non-ferromagnetic metals through spin-orbit admixture to the wave functions.
Publications — Co-author, Title, Journal or Publisher, Volume, Page, and Date

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
Name: Yamaguchi, Yoshio
Title: Research Associate

New degree, name institution granting: Doctor of Science, Tokyo University, Aug. 1953

Membership in technical societies and fraternities

Physical Society of Japan

Attendance at meetings of technical societies

International Conference on Theoretical Physics, Kyoto and Tokyo, Japan, Sept. 1953
Physical Society of Japan, Tokyo, October 1953
American Physical Society: Chicago, November 1953

MEMBERSHIP ON COMMITTEES

College

University

Technical societies

Research Completed This Year or in Progress

Effect of nuclear forces on deuteron stripping reaction
Charge independence and nuclear reactions
Two nucleon problem when nuclear potential is factorable

Name: Yntema, G. B.
Title: Research Associate

New degree, name institution granting
Membership in technical societies and fraternities
   American Physical Society

Attendance at meetings of technical societies

International Conference on Low Temperature Physics, Houston, Texas, December 1953.

MEMBERSHIP ON COMMITTEES

College
University

Technical societies

RESEARCH COMPLETED THIS YEAR OR IN PROGRESS

Study of effect of 12 Mev Deuteron radiation on superconducting metals.

Study of electrical properties of Nb wire at liquid He temperatures. This wire will be useful as superconducting, non-disapative, windings to produce magnetic fields.
Magnetoresistance of Mg, Cu, Sb, and Al at Liquid Helium Temperatures

Addresses — Title, where given, and date

Other Professional Activities, Including Summer Work
First Semester Registrations in Physics Courses 1947-8 to Date

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Second Semester Registrations in Physics Courses 1947-8 to Date

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DEGREES CONFERRED

August 1953

M.S. in Physics

Marvin Cleveland Atkins
Jerrold Franklin
David Merrill Link

B.S. in Engineering Physics

Donald Griswold Worden

Ph.D. in Physics

Harry Lustig
Ira Pullman
Alfred Guillou Redfield
George Salzman
Lee Palmer Stephenson

October 1953

Ph.D. in Physics

George Roland Briggs
Frank Shilling Eby
Donald Frank Holcomb
Carl Tatsuo Tomizuka

M.S. in Physics

Lewis Brotman
Richard Elmo Coover
Richard Bertram Curtis
John David Fox
Marvin Denham Girardeau, Jr.
Garth William Gobeli
Louis Charles Hevel, Jr.
George Herbert Kinsey, Jr.
Peter Kotsch Kloeppe1
Robert Alan Laff
Michael Francis Millea
Samuel Penner
Frank Bernard Smith
John Jude Spokas
Frederick Ludwig Vook
Richard Charles Wiguist
Malcolm Cecil Younger

February 1954

Ph.D. in Physics

Robert Dale Boys
Seymour Jay
Tet-Chong Pang

B.S. in Engineering Physics

B.S. in Physics (IAS)

Norbert Nathan Hankin
Candidates for Degrees in June 1954

Ph.D. in Physics
Lew Allen
Joseph Felix Aschner
Myer Bloom
Hugh Needham Brown
Thomas Ripley Carver
Howard Gordon Cooper
Burton Harlow Muller
Van Olin Nicolai
David Sonny Selengut
Abraham Sosin
Kenneth J. Teegarden
Edwin Angil Whalin
Donald Robert Watson

M.S. in Physics
Marvin Denham Girardeau, Jr.
Harold Eugene Hall
Walter Ashley Harrison
Nathan Levine
Daniel Charles Marris
Jane VanWinkle Morgan
Albert Eugene Murray
Richard Henry Parker
Wilbert Clarence Prothe
Raymond Solomon
Raydong Sun

B.S. in Engineering Physics
Alan Blankfield
John Eugene Chin
Alan Coulter England
Richard Charles Fedder
Herbert Wayne Kuenne
Robert Lee Mieher, BT
William Lenox Perkins
Robert Frank Trapp
Gloria Esther Winkel, HH, BT

B.S. in Physics (IAS)
Ronald Glenn Peterson
George Albert Robinson
Irwin Schneider
## Assignment of Senior Staff to Courses 1953-1954

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<td>John Bardeen</td>
<td>Professor</td>
<td>435; EE Dept. 50%</td>
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<td>P.G. Kruger</td>
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<td>R.D. Hill</td>
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|       |           |         |      | 1          |
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|       |           |         |      | Rawcliffe |
|       |           |         |      | 1          |
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|       |           |         |      | 2          |
|       |           |         |      | VanHeyningen |
|       |           |         |      | 3          |

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### Teaching Assignments and Course Enrollments

#### II Semester 1953-54

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PHYSICS DEPARTMENT SENIOR STAFF DIRECTORY

I I SEMESTER 1953-54

Name                               Rank                University Off.          Univ. Tels.           Local Address
*Abrahams, Elihu                     Res.Assoc.           4114PL 4114PL          2680 2680 6-8683 3155 S.State, C.
*Allen, J.S.                         Professor            106PL NRL              2117 2113 7-3381 509 W.Pennsylvania, U.
*Almy, G.M.                         Assoc.Head           205PL PRL              2121 2526 2675 509 S.Ridgeway, C.
*Ascoli, Giulio                      Asst.Prof.           306PL 406PL             2308 2615 9633 507 W.William, C.
Axel, Peter                          Asst.Prof.           102PL PRL              2116 2526 7-7083 507 S.Gregory, U.
*Bardeen, John                       Professor            307PL 202EE             2119 2864 6-7497 55 Greencroft, C.
*Bartlett, J.H.                      Professor            105PL 208PL             2322 2531 7-6142 1008 W.Hill, C.
*Bernardini, G.                      Res.Prof.            205PR 205PR             2526 2526 7-5101 1802 Carle Dr., U.
*Blatt, F.J.                         Res.Assoc.           310PL 310PL             2323 2323 3598 4-40-A Stad.Terr., C.
*Carver, T.R.                        Instructor           401PL 401PL             3213 3213 7-4334 500 S.Goodwin, U.
*Chew, G.F.                          Asst.Prof.           308PL 308PL             2307 2307 3860 701 Haines Blvd., C.
*Duffield, R.B.                      on leave             -- --               -- -- 618 W.Church, C.
*Emerson, R.B.                       Res.Assoc.           401PL 401PL             3213 2926 7-4147 705 W.Elms, U.
*Frauenfelder, Hans                  Res.Ast.Prof.        4114PL 4114PL           2680 2680 6-1679 1214 W.Church, C.
*Gibbs, Peter                        Professor            104PL 28PL              409 3214 7-5633 1106 S.Brucid, C.
*Gnadeiner, R.J.                     Instructor           4114PL 4114PL           2680 2680 6-5086 714 W.Hill, C.
*Goldwasser, E.L.                    Res.Assoc.           412PL 412PL             2680 3109 6-6586 507 S.Wallis, C.
*Hanson, A.O.                        Professor            412PL 34PL              3109 3175 8607 917 W.Church, C.
*Hill, R.D.                          on leave             -- --               -- -- 507 S.Johnson, U.
*Hodes, Isidore                      Res.Ast.Prof.        306PL 406PL             2308 2308 6-7078 805 S.Lincoln, U.
*Holcomb, D.F.                       Res.Assoc.           401PL 401PL             3213 2926 7-4147 1206 S.Elms, C.
*Hulizer, R.I.                       Res.Ast.Prof.        306PL 406PL             2308 2308 6-7078 909 W.Hill, C.
*Jentschke, W.K.                     Res.Prof.            414PL 414PL             2680 3108 4681 816 W.Hill, C.
*Kanjig, Werner                      Professor            412PL 412PL             2680 3108 6-1222 804 W.Illinois, U.
*Koehler, J.S.                       Professor            412PL 34PL              3109 3175 8607 507 S.Johnson, U.
*Koester, L.J.                       Professor            205PR 205PR             2526 2526 7-7759 804 W.Illinois, U.
*Kruger, P.G.                        Professor            306PL 406PL             2308 2308 6-7078 509 S.Wallis, C.
*Levatelli, L.S.                     Asst.Prof.           306PL 406PL             2308 3108 4681 1206 S.Elms, C.
*Lazarus, David                      Asst.Prof.           412PL 412PL             2680 3108 6-1222 909 W.Hill, C.
*Longacre, Andrew                    Professor            358ER 358ER             2702 2702 5912 816 W.Hill, C.
*Loomis, F.A.                        Head of Dept.        205PL --               2121 7-4169 804 W.Illinois, U.
*Low, F.E.                           Director-GSL        256ER --               2563 7-4169 804 W.Illinois, U.
*Lyman, H.M.                         Professor            304PL 34PL             2455 2455 6-7320 805 Ventura Rd., C.
*Machlup, Stefan                     Professor            106PL 368ER             2117 2923 7-4310 1099 S.Orchard, U.
*Maurer, R.J.                        Professor            412PL 107PL             3109 3265 6-6804 608 S.Foley, C.
*Meagher, R.E.                       Professor            168ER 168ER             2816 2816 5950 509 S.Wallis, U.
*Miya, Mitsuo                        G.Fellow             206FR 206FR             2526 2526 3066 206 W.John, C.
*Norberg, R.E.                       Asst.Prof.           411PL 411PL             3213 3213 6-7078 1406 N.McKinley, C.
*Nordsieck, A.T.                     Professor            304PL 464ER             2455 2586 7-4129 101 E.Flora, C.
*Patterson, R.J.                     Asst.Prof.           155NH 155NH             2675 2675 2276 612 W.Nevada, U.
*Rabinowitz, E.I.                    Res.Ast.Prof.        301PL 301PL             2303 2303 7-6406 1021 W.Church, C.
*Raucillo, R.D.                      Asst.Prof.           301PL 301PL             2303 2303 7-6406 709 W.High, C.
*Robinson, C.S.                      Asst.Prof.           301PL 301PL             2303 2303 7-6406 607 S.Westlawn, C.
*Salzman, George                     Instructor           204PL 321b              2321 2295 7-2166 300 S.Goodwin, U.
*Schmitt, R.A.                       Instructor           206FR 111ER             2526 2526 6-3136 618 W.Church, C.
*Scott, M.E.                         Professor            207PL 206FR             2458 2633 7-5969 1107 W.Green, U.
*Seitz, Frederick                    Professor            207PL 206FR             2458 2633 7-5969 512 W.Iowa, U.
*Slichter, C.P.                      Asst.Prof.           204PL 401PL             2321 2926 6-8965 1215 W.Healey, C.
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