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Guide to the Samuel King Allison Papers 1920-1965



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Descriptive Summary

| | |
|-------------------|---|
| Identifier | ICU.SPCL.ALLISON |
| Title | Allison, Samuel King. Papers |
| Date | 1920-1965 |
| Size | 19.5 linear feet (39 boxes) |
| Repository | Special Collections Research Center University of Chicago Library 1100 East 57th Street Chicago, Illinois 60637 U.S.A. |

Abstract Samuel King Allison (1900-1965), physicist. The papers document his career at the University of Chicago, both as student and faculty member, and his research on X-rays and lithium. The papers also include material on his service as director of the Enrico Fermi Institute for Nuclear Studies (1945-1965), and his chairmanship of the Physics Section of the National Academy of Sciences. The collection contains correspondence, manuscripts, notebooks, course notes, reprints, lectures, and speeches.

Information on Use

Access

The collection is open for research.

Citation

When quoting material from this collection, the preferred citation is: Allison, Samuel King. [Box #, Folder #], Special Collections Research Center, University of Chicago Library

Biographical Note

Samuel King Allison was born in Chicago on November 13, 1900. In 1917 he entered the University of Chicago and received his Bachelor of Science degree in 1921 and his doctorate in 1923. Following his graduation, he became a fellow of the National Research Council at Harvard University (1923-1925); a fellow at the Carnegie Institute (1925-1926); and a member of the faculty at the University of California (1926-1930). In 1930 Allison returned to the University of Chicago, and, from that time until his death in September 1965, continued to be associated with the University.

During his career at the University of Chicago, Allison was not only active as a teacher and a research scientist, but also as an administrator and a civil servant. In the 1930s, Allison conducted experiments with X-rays, and published his results in a book, X-rays in Theory

and Experiment. In the 1940s he began work on the liberation of nuclear energy, and was a member of the team working under Enrico Fermi which achieved the first self-sustaining nuclear chain reaction on December 2, 1942. Between 1943 and 1944 Allison served as director of the "Metallurgical Laboratory" which was developing a method for producing plutonium.

In November, 1944 Allison joined the Manhattan Project and was chairman of the Technical and Scheduling Committee at the Los Alamos Laboratory. He returned to the University of Chicago in 1945 to become the first director of the newly-formed Enrico Fermi Institute for Nuclear Studies. While director of the Institute, Allison encouraged the exchange of scientific information, free from military control. Allison also helped to found *The Bulletin of the Atomic Scientists*, and visited Spain and South America as guest lecturer and advisor.

In order to devote all of his time to research projects, Allison resigned as director of the Fermi Institute in 1958. He continued to travel, however, and was appointed by the Organization of American States to a "Direct Technical Assistance Field Mission" to the Centro Atomico, San Carlos de Variloche. From 1960 to 1963 Allison also served as Chairman of the Physics Section of the National Academy of Sciences.

When Herbert L. Anderson, Allison's successor at the Fermi Institute, resigned in 1963 to continue his research with a new particle accelerator at Argonne National Laboratory, Allison resumed his duties as director. Two years later, on September 1, 1965, Allison died while attending the Plasma Physics and Controlled Nuclear Fusion Research Conference held in Culham, England.

Scope Note

The Samuel King Allison papers contain 19.5 linear ft. of material that cover the period from the 1920s to the 1960s. The papers document his career at the University of Chicago, both as student and faculty member, and his research on X-rays and lithium. It also includes material on his service as director of the Enrico Fermi Institute for Nuclear Studies (1945-1965), and his chairmanship of the Physics Section of the National Academy of Sciences. The collection contains correspondence, manuscripts, notebooks, course notes, reprints, lectures, and speeches. The files themselves have not been formally processed and reflect the original order of the donation.

The collection has been divided into six series:

Series I contains materials from the University of Chicago.

Series II contains Allison's X-ray Research.

Series III is Allison's Lithium Research.

Series IV contains materials from the Enrico Fermi Institute for Nuclear Studies.

Series V contains materials from the National Academy of Sciences.

Series VI contains Allison's Visual Materials.

Related Resources

The following related resources are located in the Department of Special Collections:

<http://www.lib.uchicago.edu/e/spcl/select.html>

Subject Headings

- Allison, Samuel King, 1900-1965
- Enrico Fermi Institute
- Manhattan Project (U.S.)
- University of Chicago. Dept. of Physics
- Betatrons
- X-rays
- Physics

INVENTORY

Series I: University of Chicago

Subseries 1: Notes, Outlines, Lectures for Physics Courses

Box 1

Folder 1

General file, departmental courses, undated

Box 1

Folder 2

Physics 326, Spring 1946

Box 1

Folder 3

Physics 262-263, Winter and Spring 1947

Box 1

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Physics 242, Summer 1947

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Folder 5

Physics 211, Spring 1948

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Folder 6

Physics 105 & 106 & 107, 1948 and 1949

Box 1

Folder 7

Physics 463, Theory of Collisions, undated

Box 1

Folder 8

Nuclear Physics 262 & 263, Winter & Spring 1950

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Folder 1

Basic, 1951 (Jan. - S.K.A. on committee), undated

Box 2

Folder 2

Physics 362, Fall 1952, undated

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Folder 3

Physics 362, Spring 1955

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Folder 4

Physics 102, Winter 1956

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Physics 215, Autumn, 1956

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Physics 237, Spring 1958

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Physics 121, 1959

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Folder 8

Spring 1959

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Folder 9

Physics 121, 1960

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Folder 10

Physics 362, Autumn 1961

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Folder 1

Physics 223, Spring 1962

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Physics 237, Spring 1963

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Physics 235, Autumn 1963

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Folder 6

Department of Physics, PhD Candidacy Exams, undated

Subseries 2: S. K. Allison's Physics Notebooks

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Folder 1

Physics 105, 106, 107 (1948)

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Folder 1

Physics 211, Mechanics, undated

Box 5

Folder 2

Line Spectra, undated

Box 5

Folder 3

"153 Problems in Differential Equations from Murray's Text," S. K. Allison, Math 47, Autumn Quarter, 1920

Box 5

Folder 4

"Notes: Physics 11 First Term," undated

Box 5

Folder 5

"Electricity and Magnetism" (Filed September, 1954), undated

Box 5

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Sophomore Physics, Mechanics, undated

Box 6

Folder 1

Sophomore Physics, Sound and Heat, undated

Box 6

Folder 2

Alpha Particles, Counting Analyses, undated

Box 6

Folder 3

Solutions to Electro Chemistry Problems, undated

Box 6

Folder 4

Theoretical Physics, Part One, Electricity and Magnetism, Fall Quarter, undated

Box 6

Folder 5

Notes on Theory of Definite Integrals and Fourier Series, undated

Box 6

Folder 6

Solved Problems, Spring 1921

Box 6

Folder 7

Physics 361, X-Rays: "Scattering from Gases, i.e. the Dispersion," undated

Box 7

Folder 1

Original X-Ray lectures, 1931-1932: Maxwell's Equations, undated

Box 7

Folder 2

Physics 254, "Elect - Mag.," undated

Box 7

Folder 3

Physics 356, Atomic Spectra & Atomic Structure, undated

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Folder 4

Thermodynamics (1920)

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Folder 5

Electron (1920)

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Folder 6

"Electricity and Magnetism" (1929)

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Folder 7

Electron Theory Book I (1922)

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Folder 8

Electron Theory Book II (1922)

Box 8

Folder 1

Number 1: Notes on Electromagnetic Theory of Light (Kimble's Lectures), undated

Box 8

Folder 2

Number 2: (Contents listed on outside of notebook) (1925)

Box 8

Folder 3

Number 3: (Contents listed on outside of notebook), undated

Box 8

Folder 4

Number 4: (Contents listed on outside of notebook), undated

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Folder 5

Number 5: (Contents listed on outside of notebook), undated

Box 8

Folder 6

"Atommechanik," undated

Box 9

Folder 1

Physics 357, 1947

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Folder 2

Physics 362, Fall 1961

Box 10

Folder 1

Stopping Theory, undated

Box 10

Folder 2

Nuclear Physics Lectures, IV (Contents listed), undated

Box 10

Folder 3

Stopping Power, Kevatron Research, current, undated

Box 11

Folder 1

Nuclear Physics Lecture I, Contents listed on outside cover, undated

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Folder 2

Nuclear Physics Lecture II, Contents listed on outside cover, undated

Box 12

Folder 1

Nuclear Physics Lecture III, Contents listed on outside cover, undated

Box 12

Folder 2

Lecture material A, undated

Box 13

Folder 1

Lectures material B, undated

Box 13

Folder 2

Thick target scattering, undated

Subseries 3: Physics 235

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Folder 1

Lecture notes, undated

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Exams, undated

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Folder 3

Homework, undated

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Folder 4

Miscellaneous material, undated

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Folder 5

Laboratory, undated

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Folder 6

Student records, undated

Subseries 4: Miscellaneous Notes and Correspondence

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Folder 1

Correspondence, 1945-1963

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Folder 2

20th Anniversary of Chain Reaction, undated

Box 15

Folder 3

Physics department, 1945-1949

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Folder 4

Physics College, 1959

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Folder 5

Notes, undated

Box 15

Folder 6

Notes, undated

Series II: X-ray Research

Box 16

Folder 1

Apparatus

- Accelerating Tubes, undated
- Counting Circuits, undated
- Cloud Chambers, undated
- Miscellaneous, undated
- Vacuum Spectrometers, undated
- Photographic Spectrometers, undated

- Resistances, undated
- Insulators, undated
- Oils, undated
- Transformers, undated
- Vacuum, undated

Box 16

Folder 2

Angular Distribution

- Angular Distribution, undated
- Applications to Life Science, undated
- Radio-Hydrogen, Carbon, Nitrogen, undated
- Radio-Oxygen, Sodium, undated
- Radio-Phosphorus, undated
- Radio-Sulfur, Chlorine, Bromine, Iodine, undated
- Radio-Potassium, Calcium, Strontium, undated
- Radio-Iron, undated
- Other radioactive substances, undated

Box 16

Folder 3

Application to Medical Sciences

- Radio-Hydrogen, Carbon, Nitrogen, undated
- Radio-Sodium, undated
- Radio-Phosphorus, Lukemia, undated
- Radio-Phosphorus, miscellaneous, undated
- Radio-Sulfur, Halogens, undated
- Radio-Potassium, Calcium, undated
- Radio-Iron, undated
- Neutrons, undated
- Other radio-active substances, undated
- Miscellaneous, undated

Box 16

Folder 4

Artificial Radioactivity

- By alpha particles, undated
- By deuterons, undated
- By protons, undated
- General, undated

Box 16

Folder 5

Beta Ray Spectra

- Heavy elements, undated
- Light elements, undated
- Neutrinos, undated
- Theory, undated

Box 16

Folder 6

Constitution of nuclei

- Nuclear forces, undated
- Nuclear levels, n.d
- Magnetic moments, n.d
- Nuclear particles, undated

Box 17

Folder 1

Cosmic rays, undated

Box 17

Folder 2

Cyclotron, undated

Box 17

Folder 3

Fission

- Absorption of, undated
- Experiment, undated
- Theory, undated

Box 17

Folder 4

Gamma rays

- Excitation of, undated
- Internal conversion, undated
- Origin of, undated
- Widths of levels, undated
- Selection of rules, undated

Box 17

Folder 5

High potential sources

- Van de Graaf, undated
- Cockroft Wallon, undated

Box 17

Folder 6

Institutional reports, undated

Box 17

Folder 7

Ion sources

- Ion sources, undated
- Ion sources, undated
- Installation, undated
- Theory, undated

Box 18

Folder 1

Detection

- Of gamma rays, undated
- Of particles, undated

Box 18

Folder 2

Disintegration

- By alpha particles, undated
- By deuterons, undated
- By electrons, undated
- Energies of, undated
- Excitation of, undated
- Natural disintegrations, undated
- By neutrons, undated
- By protons, undated

Box 18**Folder 3**

"The X-Ray K Spectra of Some Heavy Elements," by David Saxon, undated

Box 18**Folder 4**

X-Rays, undated

Box 19**Folder 1**

Isomerism, undated

Box 19**Folder 2**

Isotopes

- 0 Z 30, undated
- 30 Z 60, undated
- 60 Z, undated
- Distribution of, undated

Box 19**Folder 3**

Masses, undated

Box 19**Folder 4**

Mesotrons, undated

Box 19**Folder 5**

Neutrons, undated

Box 19**Folder 6**

Orbital electron capture, undated

Box 19**Folder 7**

Pair emission

- Experiment, undated
- Theory, undated

Box 19**Folder 8**

Photodisintegration, undated

Box 19

Folder 9

Radio Chemistry, undated

Box 19

Folder 10

Ranges

- Of alpha particles, undated
- Of deuterons and protons, undated
- Of electrons and positrons, undated

Box 20

Folder 1

Scattering

- Of alpha particles, undated
- Neutrons - proton, undated
- Proton - proton, undated
- Of electrons, undated
- Of other particles, undated

Box 20

Folder 2

Statistics

- Of radioactive decay, undated
- Of counting circuits, undated
- Of nuclei, undated
- Other particles, undated

Box 20

Folder 3

"Focussing of Spheres", undated

Box 20

Folder 4

Stellar energies, undated

- Star evolution, undated

Box 20

Folder 5

Summarizing articles, undated

- High voltage power supply, undated
- Ranges of particles, undated
- D-D reaction, undated
- Energy selection by modulation, undated
- Mass life and various materials, , undated
- Protection from collimation, undated
- Efficiency of - production of, undated
- Velocity selection, undated
- Scattering, undated
- Slowing down of, undated
- Reaction induced by, undated

Box 21

Folder 1

Neutrons in fission, undated

- High energy, undated

Box 21**Folder 2**

Neutrons - high energy, undated

- Scattering of, undated

Box 21**Folder 3**

Neutrons - resonance, undated

- Capture, theory, undated
- Capture, experiment, undated
- Weather of levels, undated
- Scattering of, undated

Box 21**Folder 4**

Neutrons - thermal, undated

- Absorption, experiment, undated
- Absorption, theory, undated
- Diffusion, experiment, undated
- Disintegration produced by --, undated

Box 21**Folder 5**

Neutrons, general, undated

Series III: Lithium Research**Box 22**

Nineteen envelopes containing, for the most part, experimental data on lithium, undated

Box 23

Seven envelopes containing experimental data on lithium, undated

Series IV: Enrico Fermi Institute for Nuclear Studies**Subseries 1: Correspondence, Articles, and Speeches****Box 24****Folder 1**

Allison `Diary' concerning bomb tests at Alamogordo, New Mexico, July 16, 1945; Article for Science, November 16, 1962, about Arthur H. Compton. Reprint and letters, 1962

Box 24**Folder 2**

Trustees Dinner, January 1960, Speech and Correspondence (University of Chicago), 1960

Box 24**Folder 3**

Article for Bulletin of Atomic Scientists, December 1962, "Thoughts on the 20th Anniversary of the First Chain Reaction." Correspondence and article

Box 24

Folder 4

Twentieth Anniversary of the First Chain Reaction Luncheon, December 1, 1962

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Folder 5

I.A.E.A. Bulletin, December 1962

Box 24

Folder 6

Comments on basic research for NAS, 1963

Box 24

Folder 7

Speech for National Association of Physical Plant Administration, May 1963

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Folder 8

Miscellaneous

Box 24

Folder 9

Reprints (duplicates) of Allison's articles, undated

Box 24

Folder 10

"Science and Government" delivered for the University College, ca. 1958

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Folder 11

"Science and Scientists as National Assets" delivered at Chicago Teachers Union, April 19, 1958

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Folder 12

"Science and Scientists" delivered at Monsanto Science Club, St. Louis, September 23, 1958

Box 24

Folder 13

"Phi Beta Kappa," Chicago, June 10, 1959

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Folder 14

"The Moon, Sputniks, Sewer Pipes and Atoms," Navy Pier, 1959

Box 24

Folder 15

Allison's memoirs of A. H. Compton, manuscript and reprint, undated

Box 24

Folder 16

H. A. Bethe, Honorary Degree presented by SKA, Convocation, June 12, 1953

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Folder 17

Book reviews, undated

Box 25

Folder 1

Enrico Fermi file, 1955

Box 25

Folder 2

"On the Hydrogen Bomb," 1950 and 1956

Box 25

Folder 3

Reprint of article "Uranium and the Shape of Things to Come," appeared in Confluence, April 1956

Box 25

Folder 4

E. P. Winger Honorary Degree, December 20, 1957

Box 25

Folder 5

"Survival of the fittest: Race for Space," undated

Box 25

Folder 6

American Society for Metals dinner, November 1957

Box 25

Folder 7

"Thoughts on the Tenth Anniversary of First Chain Reaction," article which appeared in the University of Chicago Magazine, December 1952

Box 25

Folder 8

Alumni lecture, December 18, 1952

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Folder 9

A. H. Compton Honorary degree, December 18, 1952

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Folder 10

"Comments on Universities in U.S.," (Reply to Leopold Infeld), April 23, 1952

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Folder 11

Hamburg Conference on Cultural Freedom, July 24-25, 1953

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Folder 12

Symposium on Intellectual Freedom and the Elections, October 29, 1952

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Folder 13

Research Corporation Dinner (Libby Award), ca. March 18, 1952

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Folder 14

"Responsibilities of a University Professor," Puerto Rico, March 15, 1951

Box 25

Folder 15

Experimental Program of Institute for Nuclear Studies, Mexico, 1950

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Folder 16

"The State of Physics or the Perils of Being Important," November 26, 1949

Box 25

Folder 17

Reprints of articles: "Control and Beneficial Use of Atoms"; "Atomic Energy in Industry and the Physical Sciences"; "Institute for Nuclear Studies," , undated

Box 26

Folder 1

Correspondence, Advisory Council (Science) of the Democratic National Committee, undated

Box 26

Folder 2

Miscellaneous correspondence

Box 26

Folder 3

Assorted old publications, undated

Box 26

Folder 4

MPE, Report and meeting, November 20, 1953

Box 26

Folder 5

Pare Lorentz film "No Place to Hide," script, undated

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Folder 6

"Condon and Shortley," , undated

Box 27

Folder 1

Argonne Midwest Accelerator, file inactive since 1957

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Folder 2

Brookhaven Visiting Committee, file inactive since 1959

Box 27

Folder 3

Letters on x-ray book to Van Norstrand Co., Inc. and letters from A. H. Compton about book, undated

Box 27

Folder 4

Books: Abridged edition of B. O. Pierce's "A Short Table of Integrals"; Second revised edition of "A Short Table of Integrals"; Fourth edition of Barlow's Tables, undated

Box 28

Reprints of articles, undated

Box 29

Correspondence, Penetration of Charged Particles, 1956-1957

Box 30

Folder 1

Oak Ridge Reports, 1956-1958

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Folder 2

Miscellaneous correspondence, 1945-1963

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Folder 3

Miscellaneous correspondence, 1945-1963

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Folder 4

Miscellaneous correspondence, 1945-1963

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Folder 5

Louis Slotin, personal history, 1945-1948

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Folder 6

Slotin Memorial Fund, 1947-1960

Subseries 2: Betatron Files

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Betatron equipment, undated

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Folder 2

Betatron equipment, undated

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Folder 3

Betatron budget estimates, undated

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Betatron, undated

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Folder 5

Betatron, "Donut", undated

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Folder 6

G. E. Conference, January 23-24, 1951

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Betatron, technical file, 1949-1950

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Betatron, operating rules, proposed, undated

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Betatron, magnet, undated

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Folder 10

Monthly statements of expenditures and encumbrances for 100 mev. betatron, 1949-1950, 1950-1951, 1951-1952

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Folder 1

Betatron, financial statements and finances, undated

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Folder 2

Betatron, health physics, undated

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Folder 3

Betatron, letters to G. E., undated

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Betatron, contracts, undated

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Folder 5

Betatron pole change, undated

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Folder 6

Betatron, letters to G. E., Chicago Office, 1950

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Folder 7

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Folder 8

Various, undated

Subseries 3: Notes, Memoranda, and Correspondence, undated

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Folder 1

Institute, Nuclear Physics Journal Club, undated

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Folder 2

Institute, housing, undated

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Folder 3

Crank letters, undated

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Allison, engagements, 1949-1950

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Folder 5

Allison, engagements, 1946

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Folder 6

Allison, engagements, miscellaneous, undated

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Folder 7

Atomic power letters, undated

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Atomic Scientists of Chicago, undated

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Bush - Groves - Hutchins, undated

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Franck, undated

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Ford Foundation (C. S. Smith to C. C. Lauritsen) , undated

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Libby, undated

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Mulliken, undated

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Press releases, undated

Box 34

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Flugge article, undated

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Folder 2

Allison, personal correspondence, aid to California, undated

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Folder 3

Allison, personal correspondence, lure, visa situation, undated

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Folder 4

Institute, miscellaneous, undated

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Folder 5

Purchase orders, 1948-1955

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Folder 6

(3 in 1) travel expenses, undated

Subseries 4: Correspondence

Box 35

Folder 1

General correspondence, ca. 1953-1955; Engagement calendar, 1956-1957

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Folder 2

Personal correspondence before 1955

- McCarran Act, undated
- Rosenberg case, undated
- Britannica article, undated
- Hydrogen bomb, undated
- Condon case, undated
- Clearance laws and Loyalty Board, undated

Box 35

Folder 3

Correspondence regarding Controlled Thermonuclear Fusion Panel, 1965

Series V: National Academy of Sciences

Box 36

Folder 1

Allison's trip to Egypt in 1960, January through March, under the auspices of the Department of State, undated

Box 36

Folder 2

Allison's trip to Egypt in 1960, January through March, under the auspices of the Department of State, undated

Box 36

Folder 3

Allison's trip to Argentina, undated

Box 36

Folder 4

American Institute of Physics, Visiting Scientists Program, undated

Box 36

Folder 5

Physics, Teaching of, undated

Box 37

Folder 1

Correspondence, 1956-1964

Box 37

Folder 2

Atomic Energy Bills, printed copies, 1945

Series VI: Visual Materials

Box 38

Glass lantern slides of charts, graphs, drawings, and photographs of nuclear research equipment, used for lectures and seminars (FRAGILE), undated

Box 39

Glass lantern slides of charts, graphs, drawings, and photographs of nuclear research equipment, used for lectures and seminars (FRAGILE), undated