Guide to the Frederick Reines papers MS.F.007


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Contributing Institution: Special Collections and Archives, University of California, Irvine Libraries
Title: Frederick Reines papers
Creator: Reines, Frederick
Identifier/Call Number: MS.F.007
Physical Description: 116 Linear Feet(179 boxes, 18 oversized folders) and 3.5 unprocessed linear feet
Date (inclusive): circa 1929-2007
Abstract: This collection documents Frederick Reines' career in nuclear physics and astrophysics as both a scientist and an academic, as well as aspects of his personal life. Material ranges from the early period of his career as a graduate student, through his early professional endeavors in the Theoretical Division at Los Alamos, to his later work as an experimentalist and academic at Case Institute of Technology and the University of California, Irvine (UCI). The collection documents his major scientific interests in the detection of the neutrino and the investigation of its properties, the detection of neutrinos from cosmic events such as a 1987 supernova, and the investigation of fundamental conservation laws of particle physics. Significant projects represented in the papers include neutrino experiments at Hanford and Savannah River, and the collaborations of Case-Witswatersrand-Irvine (CWI), Irvine-Michigan-Brookhaven (IMB), and the Deep Underwater Muon and Neutrino Detector (DUMAND). Other materials document Reines' professional and administrative positions at Case Institute of Technology and UCI, as well as his lifetime association with Los Alamos National Laboratory as a researcher, consultant, and member of the University of California committee charged with oversight of the laboratory.
Language of Material: English
Access
The collection is open for research. Access to files containing information on University of California personnel matters is restricted for 50 years from the latest date of the materials in those files. Access to student record material is restricted for 75 years from the latest date of the materials in those files. Restrictions are noted at the file level. Access to original audio and video cassettes is restricted; copies are made for researcher use. Access to original glass slides is restricted. Unprocessed additions may contain restricted materials. Please contact the Department of Special Collections and Archives in advance to request access.
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Preferred Citation
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For the benefit of current and future researchers, please cite any additional information about sources consulted in this collection, including permanent URLs, item or folder descriptions, and box/folder locations.
Acquisition Information
Processing History
Processed by Caitlin Jeffrey, William Landis, and Special Collections and Archives student assistants, 1998-2002. Processing was supported by a grant from the Friends of the Center for History of Physics, American Institute of Physics. Additions processed by Carole McEwan, Audra Eagle Yun, and Special Collections and Archives student assistants, 2011-2012. Processing was supported by the Reines family.
Historical Background
Frederick Reines was a particle physicist and educator internationally recognized for his verification of the existence of the neutrino and investigation of its properties. He was born March 16, 1918 in Paterson, New Jersey. Reines attended Stevens Institute of Technology in Hoboken, New Jersey, where he completed his Bachelor of Science degree in Mechanical Engineering in 1939, and then went on to complete a Master's Degree in Mathematical Physics two years later. He continued his graduate studies in Physics at New York University, receiving his doctorate in 1944. His dissertation was entitled *The Liquid Drop Model for Nuclear Fission*.
While writing his dissertation in 1944, Reines was recruited as a staff physicist in the Theoretical Division at Los Alamos Scientific Laboratory. Although he trained as a theoretician, Reines spent his career working as an experimentalist. During his fifteen years at Los Alamos, he worked on the Manhattan project; as director of the Operation Greenhouse experiments at Eniwetok atoll; and on various experiments testing for spontaneous fission, shock waves, and cosmic and gamma rays. Reines' early neutrino experiments at Los Alamos helped to redirect the agenda of the national laboratory towards other
research objectives, in that these experiments constituted the first attempt by the national laboratory to broaden its research programs to include applications in nuclear physics other than weapons production.

In 1953 Reines and his colleague Clyde Cowan began to explore the possibility of verifying the existence of neutrinos, which had been theorized earlier by Wolfgang Pauli and Enrico Fermi. The first experiments were conducted in 1953 in Hanford, Washington, using a nuclear reactor as a source for neutrinos. In 1956 Reines and Cowan confirmed the existence of the neutrino at the new Savannah River Plant reactor in South Carolina. In the following years the Savannah River Plant served as a site for numerous other experiments exploring the nature of neutrinos. Reines maintained his association with the Savannah River Plant throughout his career.

From 1959 to 1966 Reines was a professor and chair of the Department of Physics at Case Institute of Technology. In 1963 he formed a collaboration between Case and the University of Witwatersrand in Johannesburg, South Africa (CW); when Reines left Case for the University of California, Irvine (UCI), this collaboration became known as Case-Witwatersrand-Irvine (CWI). The primary site for this collaboration, which lasted until 1979, was the East Rand Proprietary Mine (ERPM) in South Africa, and its purpose was to investigate cosmic rays.

In 1966 Reines assumed a new position as Dean of Physical Sciences at UCI. Serving as the founding Dean, he developed the curriculum, standards, and facilities, and attracted fellow scientists to the Southern California campus. Reines also continued to cultivate productive professional associations in the physics community. He served on national and regional committees for the development of particle physics and participated in conferences and workshops promoting this nascent subfield of physics. Reines was a member of, and from 1985-1988 chaired, the Scientific and Academic Advisory Committee (SAAC), which advises the President of the University of California on the administration of the Lawrence Berkeley National Laboratory (LBNL), Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL). Reines maintained his association with the LANL, as both a consultant and as advisor, throughout his career.

In the 1980s Reines initiated the formation of a new collaboration with physicists from the University of Michigan and Brookhaven National Laboratory. Known as IMB (Irvine-Michigan-Brookhaven), the primary purpose of the collaboration was to search for proton decay. Reines and Jack vander Velde of the University of Michigan initially acted as co-spokespersons for the collaboration; Reines later became the sole spokesperson. The principal site for the IMB collaboration was in a salt mine located in Painesville, Ohio. In 1987 IMB detected a burst of neutrinos from a supernova. The result of the detection of the Supernova 1987A neutrinos was the receipt in 1989 of the Rossi Prize, which the IMB collaborators shared with members of the Kamiokande collaboration in Japan.

The collaboration represented by IMB reflects Reines' scientific research priorities and also demonstrates his ability to envision future fields of investigation within physics. Reines started his proton decay research in the 1950s, when the concept was not generally accepted by the physics community as a field of inquiry. He furthered this research interest through independent proton decay experiments in the Painesville salt mine during the 1960s. When the Standard Model of Particle Physics was developed in the early 1970s, the concept of proton decay gained recognition as a valid area of scientific exploration. With the advent of this model, funding for proton decay experiments became a primary objective within the field, and IMB developed out of this interest. The time frame for Reines' earlier independent proton decay experiments in the Painesville salt mine was circa 1960 to the late 1970s, while those experiments conducted as part of the IMB collaboration occurred between the late 1970s and 1989.

Another collaboration spearheaded by Reines at UCI was the Deep Underwater Muon and Neutrino Detector (DUMAND). The primary purpose of the collaboration was to detect cosmic neutrinos. The detector was to be located on the ocean floor near Hawaii. The time period of DUMAND was the mid-1970s to 1988.

From the mid 1970s to 1998 Reines was involved in the preliminary stages of development of other collaborations such as Gamma Ray and Neutrino Detector (GRANDE); Los Alamos Meson Physics Facility (LAMPF); and Sudbury Neutrino Observatory (SNO). Most of these collaborations were not actualized in Reines' lifetime.

Throughout his career, Reines concentrated his efforts as a scientist and academic on investigating the fundamental principles of physics. His interests in the neutrino, the gravitational constant, and baryon conservation reflect his commitment to explore and verify the accepted parameters of physics. Most of the experiments represented in this collection demonstrate his capabilities as both a theorist and experimentalist.

Reines received numerous awards and honors from his colleagues and the community-at-large throughout his career. Some of the more prestigious awards were the conferment of membership in the American Academy of Arts and Sciences (1966); membership in the National Academy of Sciences (1980); J. Robert Oppenheimer Memorial Prize (1981); Franklin Medal (1992); National Medal of Science (1995); and the Nobel Prize in Physics (1995) for the detection of the neutrino.

Collection Scope and Content Summary
This collection documents Frederick Reines' career in nuclear physics and astrophysics as both a scientist and an academic, as well as aspects of his personal life. Material ranges from the early period of his career as a graduate student, through his
early professional endeavors in the Theoretical Division at Los Alamos, to his later work as an experimentalist and academic at Case Institute of Technology and the University of California, Irvine (UCI). The collection documents his major scientific interests in the detection of the neutrino and the investigation of its properties, the detection of neutrinos from cosmic events such as a 1987 supernova, and the investigation of fundamental conservation laws of particle physics. Significant projects represented in the papers include neutrino experiments at Hanford and Savannah River, and the collaborations of Case-Witswatersrand-Irvine (CWI), Irvine-Michigan-Brookhaven (IMB), and the Deep Underwater Muon and Neutrino Detector (DUMAND). Other materials document Reines' professional and administrative positions at Case Institute of Technology and UCI, as well as his lifetime association with Los Alamos National Laboratory as a researcher, consultant, and member of the University of California committee charged with oversight of the laboratory. The material in this collection is largely textual, consisting of correspondence, data books, scientific notes and other writings, publications, clippings, meeting agendas and minutes, and course-related materials. Among other formats scattered throughout the collection are photographs, glass and film slides, audio recordings, films and video recordings, and technical drawings.

For the purposes of this collection, "experiment" denotes scientific investigations for which Reines was the principal investigator, whereas "collaboration" represents his participation in experiments with colleagues from other institutions. Collaborations normally involved a range of experiments conducted over an extended period of time with a particular scientific objective, and they may or may not involve a particular site or facility. In the scope of this collection, experiments tend to focus on the investigation of fundamental principles of physics, while collaborations concentrate on the investigation of properties or interactions of elementary particles. Much of the collection focuses on the detection and investigation of the properties of the neutrino that took place at both the Savannah River Plant and the East Rand Proprietary Mine near Johannesburg, South Africa. The other major emphasis is Reines' interest in proton decay ("PDK"). Proton decay experiments were conducted at the Morton Salt Mine in Painesville, Ohio, which was the site for early proton decay experiments in the 1960s, as well as for the later investigations of the IMB collaborators. Personal material in the collection includes family and personal photographs, diaries, video and audio recordings, correspondence, and related documents and mementos that provide evidence of Reines' private life and interests. Frederick Reines died on August 26, 1998 at the age of 80.

Collection Arrangement

This collection is arranged into 14 series. Unless otherwise noted in the series and subseries descriptions, the arrangement scheme for the collection was imposed during processing in the absence of a usable original order.


The collection also contains two unprocessed additions:


Existence and Location of Originals

External media received, digital object MSF007_DIG001.

Subjects and Indexing Terms

Nobel Prize winners -- Archives
Nuclear physicists
Neutrino astrophysics
Protons -- Decay -- History -- Sources
Negatives (photographic)
Neutrinos
Motion pictures (visual works) -- 21st century.
Slides
Nuclear physics
Nuclear arms control
Nuclear weapons -- Testing
Elastic scattering
Cosmic ray muons
Sound recordings
Lantern slides
University of California, Irvine -- Faculty -- Archives
Reines, Frederick -- Archives

**Early career** Series 1. circa 1931-1966

**Series Scope and Content Summary**
This series is comprised of education files, from grade school through Reines’ Ph.D. from
New York University and early employment files from graduate teaching assignments
through his years at Los Alamos Scientific Laboratory from 1943-1954. The education files
consist of yearbooks, grades and transcripts, class notes and examinations, correspondence,
and materials relating to Reines’ masters thesis and doctoral dissertation. The files from Los
Alamos Scientific Laboratory, where Reines was a young physicist working in the Manhattan
Project, are particularly rich in documentation about the living conditions and also
contemporary clippings regarding the atomic bomb. The series also includes newsletters
received by Reines while he was a member of the Cleveland Orchestra Chorus.

**Arrangement**
The series is arranged alphabetically by topic, with materials in each topical grouping
arranged chronologically whenever possible.

**Cleveland Orchestra Chorus, correspondence, program and newsletters 1960-1962**

**Education files** Subseries 1.1.

**Public School, North Bergen, New Jersey, 8th grade report card and school photo 1931**

**High School**

**Class assignments 1931-1932**

**Commencement Exercises, June, 1935, program 1935**

**General Notes & Impressions of Fred P. Reines, school work and personal
notes 1935**

**Horace Mann School (North Bergen, NJ): holograph identification tag circa 1932**

**Personal diary 1934-1935**

**History notebook 1930s**

**Orange and Blue, Union Hill High School annual 1935 1935**

**Stevens Institute of Technology (Hoboken, NJ)**

**Awards and post-graduation recognition 1966-1995**
### Early career Series 1. circa 1931-1966

#### Education files Subseries 1.1.

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<td>Classical Electromagnetic Radiation 1940</td>
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<td>1, folder 26a</td>
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<td>Introduction to Quantum Mechanics, class notes 1945</td>
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<td>92, folder 15</td>
<td>Neutron physics, class by E. Fermi, transcribed notes 1946</td>
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<td>92, folder 15</td>
<td>Theoretical Mechanics, Los Alamos University lecture notes 1946</td>
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**Employment files Subseries 1.2.**
box 1, folder 27
1939-1941, Civil Service positions, forms and correspondence 1939-1941
1941, New York University, letter of recommendation for part-time instructorship
1941

box 93, folder 2
1946, Job searches, correspondence 1946

box 93, folder 3
1946, State University of Iowa, correspondence 1946

box 1, folder 28
1946-1947, New York University correspondence, notes and exams for summer session “Atomic Physics” course 1946-1947

box FB-36, folder 2
Oversize exam questions circa 1947

box 93, folder 4
1947, Brookhaven National Laboratory, Statement of Account for subcontracting employment 1947

box 1, folder 30
1948, Argonne National Laboratories correspondence 1948

box 93, folder 7
Amateur theater and singing performances, programs, scripts, and clippings 1945-1959

box 93, folder 8
Association of Los Alamos Scientists, information 1945-1946

box 94, folder 1-3, 9
Atomic bomb, Los Alamos and related information, clippings, books 1945-1954

box 94, folder 4
Atomic Energy Act of 1954, United States, with Reines’ annotations 1954

box 94, folder 5
Army-Navy “E” Production Award, in recognition of research and development of the atomic bomb, Santa Fe, New Mexico 1945 October 16

box 95, folder 10
Balloon flight “Finder Notice” undated

Scope and Content Summary
Consists of two folded, stapled sheets of water-resistant paper with Reines’ handwritten instructions for any individuals who might discover a grounded experiment balloon, including an offer for a reward. Instructions note “this United States Government scientific equipment was carried into the stratosphere by a giant balloon for experimental purposes.”

box 96, folder 1
Bulletins and memoranda 1944-1945

box 94, folder 6
Correspondence 1944-1950

box 138,
Clippings and Los Alamos Times issues circa 1940s

folder 2-3, 10-13

box 96, folder 12
Early neutrino testing documentation and notes, potentially for publication

box 94, folder 7
Employee handbooks 1947-1954

box 95, folder 1-4
General information 1949-1968

box 95, folder 5
LASL news 1943-1963

box 13, folder 2
Los Alamos National Laboratory, National Underground Science Facility proposal, advisory committee materials 1982-1983

box 95, folder 6
Notices to residents 1944-1958

box 138, folder 1
Operation Greenhouse, information and correspondence 1951

box 86, folder 15
Doghouse, oversized book 1951

box 95, folder 8
Operation Greenhouse (Eniwetok Atoll) ephemera 1951

box 95, folder 9
Personal matters circa 1950

box 96, folder 2
Receipts, pay stubs, and other official information 1943-1952

box 1, folder 32
Social events

box 1, folder 33
1952, University of New Mexico Extension, "Dynamics" exercises and final examination 1952

box 1, folder 33
1953, Naval Research Laboratory, correspondence 1953

Guide to the Frederick Reines papers MS.F.007
Case Institute of Technology files Series 2. 1958-1976

Series Scope and Content Summary

This series consists of correspondence, memoranda, lecture notes, class assignments, exams, reports, photographs, and university publications. The material documents Reines' activities as professor and head of the Physics Department at Case Institute of Technology (now Case Western Reserve University) in Cleveland, Ohio. While at Case, Reines served as a representative to the Associated Midwest Universities' Accelerator Users Group, which coordinated the use of research facilities at the Argonne National Laboratory, near Chicago, by physicists from a number of Midwestern universities. This series also documents the activities of that group, especially regarding the installation of a Zero Gradient Synchrotron (ZGS) facility at Argonne. There are also newsletters and personnel files from his time working at the Savannah River Plant, South Carolina on neutrino experiments.

Arrangement

The series is arranged alphabetically by topic, with materials in each topical grouping arranged chronologically whenever possible. Researchers will also find correspondence regarding Reines' tenure at Case in Series 6. Correspondence file.

Processing note

Researchers interested in materials relating to the experiments that Reines conducted and the collaborations with which he was involved while at Case should also consult the following series: Series 8. Data books; Series 9. Experiments; Series 10. Collaborations; and Series 11. Funding agency files.

Associated Midwest Universities, correspondence and proceedings 1960-1966

Case Western Reserve University, Case Visiting Committee, correspondence 1968-1976

Department of Physics

Annual report 1965-1966
Correspondence regarding appointment as department head, 1958-1959
Correspondence and notes, 1959-1966 1959-1966
Faculty publications list, circa 1960 circa 1960
Subcommittee on Undergraduate Instruction, 1961-1962 1961-1962
Teaching materials
  P-1 1962
  P-2 General Physics 1962
  P-3 1960
  P-8 1961-1963
  P-10 1962
  P-122 Thermodynamics 1964-1965
  P-141 Physical optics 1961-1962
  P-263 Physics of the Nucleus, final exam 1962
  Thermodynamics, lecture notes 1964
The Differential 1959 yearbook 1959
Personnel records 1959
Publications
  "The Case neutrino program" 1966
  Catalogs and annual reports 1958-1967
Savannah River Plant, South Carolina, clippings 1956
Social events, invitations, maps and receipts 1962
Reines publicity and photographs circa 1959-1966

Guide to the Frederick Reines papers MS.F.007
University of California committee files Series 3. 1970-1996

Series Scope and Content Summary

This series consists of agendas, correspondence, draft and final versions of reports, meeting minutes, news clippings, and publications. The vast majority of the material documents Reines' twenty years of service as a member, and from 1985 through 1988 as chair, of the University of California's Scientific and Academic Advisory Committee (SAAC). This committee conducts oversight activities and advises the President of the University of California on the administration of the Lawrence Berkeley National Laboratory (LBNL), Lawrence Livermore National Laboratory (LLNL), and Los Alamos National Laboratory (LANL). This series is especially rich in material concerning the national debate over the Comprehensive Test Ban treaty to ban nuclear weapons testing, the University of California's Institute on Global Conflict and Cooperation (IGCC), the frequent unrest within the university concerning the propriety of its administration of national weapons laboratories and the potential conflicts between weapons research and academic freedom, and the federal government's laser programs of the 1980s (the Star Wars defense).

Arrangement

Materials in this series are arranged alphabetically by the name of the committee and then chronologically.

Processing note

Researchers will also find correspondence regarding Reines' University of California committee work in Series 6. Correspondence file.

- box 1, folder 59: Advisory Committee on Astronomy, committee charge and correspondence 1976-1986
- box 96, folder 6: Committee of Scholarly Honors and Awards, correspondence, minutes, and notes 1996
- box 1, folder 60: Coordinating Committee on Graduate Affairs (CCGA), correspondence, notes, and photographs 1971-1974
- box 1, folder 61: Joint Committee to Advise the President on the Selection of a Chancellor for the Irvine Campus, correspondence 1983
- box 96, folder 8: Scientific and Academic Advisory Committee (SAAC) Working file, notes, and correspondence 1987-1992
- box 1, folder 63: Undated undated
- box 1, folder 66: 1977 1977
- box 2, folder 1: 1978 1978

Conditions Governing Access note

Access to UC personnel material in this file is restricted until 2032-01-01.

- box 2, folder 4: 1982 1982
- box 2, folder 6-7: 1985 1985
- box 2, folder 8-12: 1986 1986

Conditions Governing Access note

Access to UC personnel material in this file (folder 12) is restricted until 2037-01-01.

1987

- box 96, folder 7: "Report of the Scientific and Academic Advisory Committee to President Gardner", Reines' working copy 1987 July 8
box 2, folder 13-19

General 1987

Conditions Governing Access note
Access to UC personnel material in this file (folder 16; folder 18, 2 items) is restricted until 2038-01-01.

box FB-34, folder 7

"California: the weapons master," special report of The Sacramento Bee 1987

1988 1988

1989 1989

Conditions Governing Access note
Access to UC personnel material in this file (folder 25, 5 items) is restricted until 2040-01-01.

box 2, folder 20-24

box 2, folder 25-26

1989 1989

1990 1990

1991 1991

1992 1992

Conditions Governing Access note
Access to UC personnel material in this file is restricted until 2043-01-01.

box 3, folder 1-5

box 3, folder 6-10

box 3, folder 11

box 3, folder 12

Steering Committee of the Institute on Global Conflict and Cooperation, correspondence 1982-1990

University of California, Irvine files Series 4. circa 1931-1996

Series Scope and Content Summary
This series consists of material pertaining to Reines' tenure as professor of Physics and Dean of Physical Sciences at UC Irvine. Very little of his Dean of Physical Sciences files are extant in this collection. Reines' general files consist of a wide range of materials including personal notebooks, Department of Physics files, correspondence and his desk files with topical information. His teaching files consist of class assignments, exams and his teaching notes for over fifteen different physics classes including Physics 15, "Rainbows and Things" for non physics majors.

Arrangement
The series is arranged in 2 subseries:
Missing Title

Restrictions
This series includes audio and video materials. Access to originals is restricted; researchers must request viewing/listening copies of restricted materials.

Processing note
Researchers will also find correspondence regarding Reines' tenure at UCI in Series 6. Correspondence file. Researchers interested in materials relating to the experiments that Reines conducted and the collaborations with which he was involved while at UCI should also consult the following series: Series 8. Data books; Series 9. Experiments; Series 10. Collaborations; and Series 11. Funding agency files.
Subseries 4.1. General files 1965-1996

Scope and Contents note

This subseries consists of correspondence, memoranda, minutes, reports, clippings, news releases, photographs, audiocassettes, videocassettes, and notes relating to Reines' tenure as a faculty member and administrator at UC Irvine. Topical coverage in this subseries includes his campus-wide committee work, Department of Physics activities, and clippings and other publications relating to Reines and several of his colleagues. Also documented extensively is the 1988 Reinesfest event held at UCI in honor of Reines' 70th birthday.

Arrangement note

Materials in this subseries are arranged alphabetically by topic.

Alphabetical notebook undated

California College of Medicine Executive Faculty Committee, memoranda and clippings 1975-1976

Chen, Herbert H., correspondence, offprints, and reports and Reines' eulogy for him 1970-1992

Clippings and publicity materials concerning Reines 1965-1996

Correspondence regarding appointment as Dean of Physical Sciences 1965-1966

Clippings and publicity materials concerning the university 1966-1994

Committee on the Performing Arts Complex, correspondence 1979

Computer allocation meeting, audiocassette circa 1970

Conditions Governing Access note

Original audiocassette restricted, use copy must be used by researchers.

Preservation copy, reel-to-reel, reproduction date: 1999

Department of Physics

Faculty meeting minutes and space needs 1990

Guest speakers 1966-1991

Lab program for outstanding high school physics students, schedule 1987

Undergraduate Review Committee, course sequence revision document 1984

Desk files

circa 1980-1989

1990

1991

1992

1993

1994

1996

F.R. Talks

Math notes and soap film

Supernova 1987A

Supernova 1987A talk

Medical School - Radiology recall 1984

Honorariums, letters, etc. 1990-1994

Global Foundation 1995

Cosmic rays 1961-1992

Brain 1994

Road noise undated

Pauli principle 1981-1988

NYU - Dr. of Science 1996

Neutrinos

History of Physics 1987
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<td>&quot;Dr. Peltason's last day on the UCI campus,&quot; script for skit in which Reines participated undated</td>
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<td>Environmental Health and Safety Office, radiation use and monitoring forms 1981-1988</td>
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<td>box 3, folder 25</td>
<td>Equipment inventories for Reines' research group 1971-1978</td>
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<td>box 3, folder 26</td>
<td>Event at UCI honoring Reines, includes Chancellor Aldrich, slides circa 1980</td>
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<td>box 3, folder 27</td>
<td>Health Sciences Planning Committee, meeting materials and notes 1976-1979</td>
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<td>box 3, folder 28</td>
<td>Hruschka, August A., personnel files 1967-1977</td>
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<td>Physicists, biographical information 1971-1999</td>
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<td>Program statement for physical science organized research facility 1979</td>
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<td>Invitation and pre-registration forms 1988</td>
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<td>box 4, folder 2</td>
<td>Photographs 1988</td>
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Subseries 4.1. General files 1965-1996

- box 4, folder 3
  Planning documents and banquet remarks 1987-1988
  Posters 1988

- box 4, folder 4
  Publicity 1988
  Social events, invitations and programs 1967-1997

- box 101, folder 6
  UC clip sheet 1976

- box 102, folder 1
  UCI University Club, thirtieth anniversary 1967-1997, booklet with wellwishes from colleagues 1997

- box AV-002, cassette MS-F07-A002
  Ultrasound circa 1970-1979
  University of California/CBS Radio Network, Science Editor (radio program), audiocassette, "Tracking the elusive neutrino." Discussion of Reines' work on neutrino oscillation. circa 1973

  Conditions Governing Access note
  Original audiocassette restricted, use copy must be used by researchers.

- box AV-003, cassette MS-F07-A002PM
  Preservation copy, reel-to-reel, reproduction date: 1999

- box 4, folder 5
  UCI Summer Science Institute, brochure 1993

- box 102, folder 3

- box 102, folder 4

Subseries 4.2. Teaching files circa 1931-1995

Scope and Contents note
This subseries consists of lecture notes and transcriptions, assignments and exams, overhead transparencies, related course preparation materials and students' papers. Courses documented include those taught by Reines for the Department of Physics as well as courses for which he served as guest lecturer. An especially significant course, well-documented in this subseries, is "Rainbows and Things," a popular university studies course that Reines taught for many years for undergraduates who were not physics majors. The subseries also includes copies of several dissertations for which Reines served as committee chair or member.

Arrangement note
The subseries is arranged topically, with Department of Physics courses filed by their course number.

- box 4, folder 6
  Dissertation for which Reines was committee chair 1976

- box 4, folder 7
  Dissertations for which Reines was committee member 1981-1995
  Physics 5A, Newtonian mechanics, course materials 1983-1989
  The engineer and engineering (UCI course), guest lecture on science and engineering, notes for talk 1971

- box AV-002, cassette MS-F07-A015
  Physics class, lecture on behavior of students, audiocassette circa 1972

  Conditions Governing Access note
  Original audiocassette restricted, use copy must be used by researchers.

- box 4, folder 12-13

- box 103, folder 1-2
  Physics 5B, Oscillations & waves & special relativity 1981-1982

- box 103, folder 3
  Physics 5B, Oscillations & waves & special relativity, notes 1990-1991
box 104, folder 1-2, box 103, folder 4-5, box 4, folder 14
box 104, folder 3, box 5, folder 7, box 104, folder 4

Physics SC, Electricity and magnetism, course materials 1968-1983

Physics 5D 1991
Physics 10, A sense of sound, course materials and final 1976
Access
Restricted access (student information)

box 4, folder 15-16, box 104, folder 5, box 104, folder 6, box 4, folder 17-18
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Physics 111A, Classical mechanics, course materials and evaluations 1977-1978
Physics 112A, Electricity and magnetism, course materials and evaluations 1975-1984
Physics 112B, Electricity and magnetism, course materials and evaluations 1975-1976
Physics 113A, Quantum mechanics, course materials 1983-1984
Physics 113B, Quantum mechanics, course materials 1984-1985
Physics 130, Quantum mechanics, course materials 1972-1973

Physics 161A, Course materials and evaluations 1974
Physics 211, Classical mechanics, course materials and student work 1980-1981

Physics 211, Classical mechanics, student evaluations for winter 1980 1980
Physics 251, student paper undated
Physics of the environment (UCI course), guest lecture on radiation hazards and radioactive wastes, notes and background materials 1971
University extension, Humanities X406, The ascent of man, lecture notes and brochure 1976

Unnamed class, course materials undated
University Studies course (Physics 16), "Rainbows and things"

Course evaluations 1974-1979
Course information 1972-1979
Lecture transcriptions 1970-circa 1979
Notes and related materials 1970-1986

Notes and related materials 1970-1986

Oversize cartoon, "B.C." circa 1975
Related materials circa 1931-1986
Slides of rainbows 1969
Student projects and exams 1974-1979

Conditions Governing Access note
Access to UCI student records (entire file) is restricted until 2055-01-01.

box FB-24, folder 3
Oversize material 1972-1974

Conditions Governing Access note
Access to UCI student records (entire file) is restricted until 2055-01-01.
Professional activities Series 5. 1934-1999

Series Scope and Content Summary
This series contains correspondence, award certificates, preprints and offprints, transparencies and drafts for lectures, photographs, conference proceedings, notes, consultant agreements, reports, audiocassettes, videocassettes, and clippings. Materials document activities--such as conferences, lectures, consulting and professional association business--that transcend the parameters of a particular experiment, collaboration or university affiliation.

Arrangement
This series is arranged topically. Within various topical groupings, arrangement may be either topical or chronological depending on the nature of the material.

Restrictions
This series includes audio and video materials. Access to originals is restricted; researchers must request viewing/listening copies of restricted materials.

Processing note
Researchers will find correspondence regarding Reines' professional activity in Series 6. Correspondence file. Materials pertaining to the dissemination at conferences and in publications of information regarding Reines' experimental and collaborative work may also be found in Series 9. Experiments and Series 10. Collaborations. Scholarly publications produced by Reines throughout his career are filed in Series 7. Publications and writings.

Subseries 5.1. Awards

American Academy of Arts and Sciences
- American Academy of Arts and Sciences, certificate 1966
- American Academy of Arts and Sciences, election as fellow, program and information 1966

American Association for the Advancement of Science, Bruno Rossi Prize
- American Astronomical Society, Bruno Rossi Prize, award citation 1989

American Astronomical Society, Bruno Rossi Prize
- Panofsky Prize certificate 1992
- Correspondence and lecture notes 1992
- Overhead projector sheets for Panofsky Award talk 1992

Case Western Reserve University
- Case Western Reserve University, Doctor of Science honorary degree correspondence and printed material 1996
- Case Western Reserve University, Doctor of Science honorary degree 1996
- Michelson Morley Award, Case Western Reserve University
- Case Institute of Technology, Introductory remarks for Albert A. Michelson Memorial Lecture undated
- Oversize award citation, photocopy 1990

Michelson Morley Award, Case Western Reserve University, correspondence, press release, notes, clippings, photos and slides 1990

Roland Eötvös Physical Society
- Roland Eötvös Physical Society medal undated
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<td>FB-34, folder 9</td>
<td>Franklin Medal, The Franklin Institute 1992</td>
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<td>5, folder 38, folder 4-5</td>
<td>Franklin Medal oversize poster 1992</td>
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<td>157, folder 2</td>
<td>Franklin Medal, correspondence, notes, program, text of lecture and clippings 1991-1994</td>
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<td>Franklin Medal certificate 29 April 1992</td>
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<td>Guggenheim Fellowship 1958-1959</td>
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<td>Guggenheim Fellowship, John Simon Guggenheim Memorial Foundation, application materials and correspondence 1956-1958</td>
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<td>University of Texas physics faculty oversize congratulatory certificate 1980</td>
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<td>Correspondence and clippings 1983-1985</td>
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<td>153, carton 3</td>
<td>Oversize photograph of Reines with President Reagan 1985</td>
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<td>National Medal of Science pin</td>
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<td>New York University, Distinguished Alumnus Award, 1994 1994 June 1</td>
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<td>New York University, Doctor of Science honorary degree 1996 May 16</td>
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<td>New York University, citation at Serge A. Koff Memorial Symposium, “Reminiscences and neutrinos,” text of lecture and publicity 1991</td>
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<td>Nobel Prize in Physics</td>
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<td>Nobel Prize correspondence regarding publication of his lecture 1996</td>
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Ephemera donated by UCI Chancellor Dr. Laurel Wilkening 1995
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The Nobel Population 1901-1937: a census of the nominators and nominees for the prizes in physics and chemistry 1987
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Oversize materials 1995
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Nobel Prize publicity and clippings 1995
Nobel prize speech, original text 1995
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Request for nominations for Nobel Prize in Chemistry 1998 1997
Sylvia Reines' notes regarding Nobel Prize issues 1995
UCI events 1996
UCI luncheon for Sylvia Reines 1996
White House reception 1995
J. Robert Oppenheimer Memorial Prize, University of Miami 1981
Correspondence, letters of congratulations 1981
J. Robert Oppenheimer Memorial Prize medal 1981
J. Robert Oppenheimer Memorial Prize certificate 19 January 1981
Phi Beta Kappa, Foundation Member certificate 1974
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Russian Academy of Science member certificate March 1994
Russian Academy of Science, election as foreign member, award and correspondence 1994-1995
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A.D. Sahkarov Conference on Physics commemorative medal May 1991
Honor society keys and pins 1935-1976
Jerusalem Einstein Centennial Symposium medal 1979
Unidentified Japanese acrylic paperweight award
Unidentified Japanese pin from science event
Unidentified Russian medal
State of California
California Senate Resolution commending Reines on receiving Nobel Prize 1996
Correspondence and photographs
California Senate Resolution commending Reines as recipient of UCI Medal 1987
California State Assembly Resolution commending Reines on UC Irvine Distinguished Faculty Lectureship Award 1978
Stevens Institute of Technology
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Subseries 5.1. Awards

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<td>114, folder 4</td>
<td>Steven Honor Award, publicity and nomination form, and Reines' remarks 1971</td>
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<td>Stevens Renaissance Engineering and Science Award, speech 1995 June 14</td>
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<td>Honor Award, Centennial, and Old Guard award pins and medal</td>
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<td>University of California certificate of appreciation 1988</td>
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<td>5, folder 57</td>
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<td>Sigma Xi Scientific Research Society distinguished member certificate undated University of the Witwatersrand, Johannesburg</td>
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<td>1950, American Physical Society, Mexico City, Mexico, photos, maps, phrase books, magazines, and drawing 1950 June 21-24</td>
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<td>6, folder 7</td>
<td>1953, American Physical Society meeting (Albuquerque, NM), neutrino experiment papers presented by others 1953-1955</td>
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<td>6, folder 8</td>
<td>American Association for the Advancement of Science, Atlanta meeting, correspondence 1955</td>
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<td>Gordon Research Conference (AAAS), Kimball Union Academy (Meriden, NH), photograph and identification of participants 1955</td>
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<td>Conference on the Interaction between Cosmic Rays and High Energy Physics (Case Institute of Technology), proceedings 1964</td>
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<td>6, folder 13</td>
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<td>6, folder 14</td>
<td>Ninth Scintillation and Semiconductor Counter Symposium (IEEE), brochure and proceedings 1964</td>
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<td>Second Texas Symposium on Relativistic Astrophysics, Austin, TX, folder 1964 December 15-19</td>
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<td>1965, Informal Neutrino Conference (Geneva, Switzerland), trip report, notes, and proceedings contributions 1965</td>
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<td>Solar neutrinos, status and prospects (UCI), correspondence, notes, photographs, and proceedings 1971-1973</td>
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<td>Fourth International Workshop on Weak Interactions with Very High Energy Beams, annotated program, notes, and transparencies 1976</td>
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- Sixth Workshop on Grand Unification (Minneapolis, MN), registration materials and agenda 1985

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- Eighth Workshop on Grand Unification (Syracuse, NY), annotated program 1987
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- Erice Conference International School of Nuclear Physics, Erice, Italy, talk on The Detection of Pauli’s Neutrino, 1994
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box 8, folder 54, box 13, folder 1 Photographs, miscellaneous undated, includes photographs of Clyde Cowan, J. Robert Oppenheimer, and Reines circa 1960-circa 1998
box 8, folder 60 Prize juries, California Museum of Science and Industry (Los Angeles, CA), prize brochure 1973

Biographical/Historical note
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box 9, folder 6-7 Publications on the history of physics and neutrino research 1957-1992
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box 118, folder 6 Russian Academy of Sciences, Foreign Member, election as member and correspondence 1994-1999
box 9, folder 2 Society of the Sigma Xi, election and informational materials 1944-1968
box 9, folder 3, Sigma Pi Sigma (American Institute of Physics), correspondence and certificate 1994-1996
box 118, folder 7 Tau Beta Pi (National Engineering Honor Society)
box 9, folder 4 Tau Beta Pi correspondence 1966
box 157, folder 2 Tau Beta Pi member certificate 4 December 1966
box 9, folder 5 Union of Concerned Scientists, correspondence and publicity 1985-1995

Subseries 5.6. Topical files
Guide to the Frederick Reines papers MS.F.007

Professional activities Series 5.1934-1999
Subseries 5.6. Topical files

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Clippings concerning Reines' work and the neutrino circa 1960-1996

Oversize original publication, Sciences et avenir 1965

Oversize clippings 1982-1987

Clippings and other materials on or by Bethe, Bohr, Einstein, Fermi, Heisenberg, and Wheeler 1947-1991

Scope and Contents note
Includes 1987 letter from Reines to Mrs. Fermi.

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box 119, folder 4, box 8, folder 55-59

Cowan, Clyde L., correspondence, obituaries and memorials, and publications 1957-1975

Committee to Review Physics Programs of the American Institute of Physics, correspondence, notes and final report 1994

Foundations of nuclear physics (1949), collection of essays annotated by Reines 1952

International Centre for Theoretical Physics (Trieste, Italy), publication circa 1968-1989

International Neutrino Conferences, draft by Reines of rules of order 1977

Irvine celebration of the centenary of Einstein's birth, clipping 1979

Israel Academy of Sciences, Woolf Prize undated

Lawrence Livermore National Laboratory, publications 1989-1990

Panofsky Prize, 1994 Selection Committee 1993

Preprints, offprints and drafts sent to Reines by colleagues 1934-1997

Processing Information note
Filed by surname of first author.

box 119, folder 5
box 119, folder 6
box 119, folder 7

South Africa information

Neutrino experiments in South Africa controversy 1963-1967

General information, pamphlets and maps circa 1970s

Virginia Trimble material to support her nomination as Editor of Science magazine 1994

Correspondence Series 6. 1952-2001 and undated

Series Scope and Content Summary
This series is comprised chiefly of correspondence, but also includes a variety of materials sent to Reines along with correspondence, including preprints, photographs, brochures, conference materials, and publications. The series represents the correspondence file maintained for Reines by office staff at UCI and, as such, is a particularly rich source of information on all of the activities and research projects in which he was engaged during his career.

Arrangement
This series is arranged chronologically except for several files of correspondence with physicists that Reines maintained separately from the chronological files.

Processing note
The original chronological arrangement of the series was maintained during processing. Exceptions to this arrangement are several files of correspondence with physicists that Reines maintained separately from the chronological files and that are filed at the end of the series. Included is correspondence with John Wheeler, who served as a mentor and sounding board for Reines throughout his career. Researchers will also find correspondence in almost all other series.

box 10, folder 1, box 119, folder 8

Undated correspondence circa 1952-circa 1995
Scope and Content Summary
Includes correspondence with Carey Williams of Metro-Goldwyn-Mayer Pictures regarding film technology.

Scope and Content Summary
Includes letter from Edward Teller of the University of California Radiation Laboratory; telegram to W. Pauli confirming detection of the neutrino.

Scope and Content Summary
Includes correspondence with Warren E. Fetty of the Wham-O Manufacturing Company, regarding Frisbees behind the Iron Curtain; correspondence with Charles Hillinger of the Los Angeles Times regarding Reines' idea for a paperclip cartoon called "Klipwits."
Correspondence Series 6.1952-2001 and undated

Guide to the Frederick Reines papers MS.F.007

Scope and Content Summary
Includes letter from Reines and response from Buckingham Palace regarding funding for the D'Oyly Carte Opera Company.

Scope and Content Summary
Includes birthday letter from President Ronald Reagan.

Scope and Content Summary
1991-1992, Correspondence supporting Reines for the Enrico Fermi Award

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1996-2000, correspondence handled by Dr. Reines’ secretary 1996-2000


Correspondence filed by Reines by correspondent

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Bahcall, John 1964-1978

box 14, folder 2
Davis, Raymond 1967-1975

box 123, folder 3
Fermi, Enrico 1952

box 14, folder 3
Mark, Hans 1964-1981

box 14, folder 4
Marx, George 1968-1976

box 14, folder 5

Books sent to Reines: Frontiers of Time and Beyond the Black Hole, 1978-1979

Publications and writings Series 7. 1945-1999

General Physical Description note: no content

Series Scope and Content Summary

This series contains reprints, correspondence, drafts, and notes relevant to Reines’ published and unpublished writings. The reprint and publications files concern his scientific work, while the unpublished writings contain a mixture of written material of both a scientific and a literary nature.

Arrangement


Subseries 7.1. Numbered reprint file

Scope and Contents note

This subseries contains reprints of Reines’ scientific publications, organized according to the numbered “Publications list” maintained by his research group at UCI. Numbers missing from the contents list below indicate reprints for which a copy is not in the collection. Information in square brackets in the publication titles represents symbols or formulas that appear in the original titles on Reines’ publications list. Drafts and correspondence associated with these publications are filed in Subseries 7.2. Publications files.

Arrangement note

A copy of the “Publications list” is filed first, followed by the reprints, arranged by the numbering of the list.

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box 14, folder 7
2. The liquid drop model for nuclear fission 1946

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3. The mach effect and height of burst 1947

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4. Excitation time of silver-activated zinc sulphide on electron bombardment 1948

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5. Shock from an air burst 1950

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6. Are their peaceful engineering uses of atomic explosives? 1950

box 14, folder 12
7. Nuclear emulsions and the measurement of low energy neutron spectra 1950

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8. The air blast wave from a nuclear explosion 1952

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9. A proposed experiment to detect the free neutrino 1953

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10. Detection of the free neutrino 1953

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11. Determination of total body radioactivity using liquid scintillation detectors 1953

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13. Conservation of the number of nucleons 1954
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15. Large-volume liquid scintillators: Their applications 1954
16. Electron spectrum from [muon]-meson decay 1954
17. Upper limit on the neutrino magnetic moment 1954
18. A test of neutrino-antineutrino identity 1956
19. Detection of the free neutrino: A confirmation 1956
20. The neutrino 1956
21. Liquid scintillators as neutron spectrometers 1957
22. Neutrino magnetic moment upper limit 1957
23. Neutrino physics 1957
24. Search for antineutrino interaction with deuterons 1957
25. Conservation of the number of nucleons 1958
27. Giant liquid scintillation detectors and their applications 1958
28. Liquid scintillators for free neutrino detection 1958
29. The free antineutrino absorption cross section. Part I: Measurement of the free antineutrino absorption cross section 1958
30. The free antineutrino absorption cross section. Part II: Expected cross section from measurements of fission fragment electron spectrum 1958
31. Free antineutrino absorption cross section. I. Measurement of the free antineutrino cross section by protons 1959
32. Free antineutrino absorption cross section. II. Expected cross section from measurements of fission fragment electron spectrum 1959
33. The peaceful nuclear explosion 1959
34. Detection of the free antineutrino 1960
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37. Neutrino reactions 1961
38. A large Cerenkov detector 1962
39. Experimental test of the conservation of nucleons 1962
40. Color scheme for spatial resolution using liquid scintillators 1963
41. Neutrinos, old and new 1963
42. A search for interactions produced by cosmic ray neutrinos 1965
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44. Limits on solar neutrino flux and elastic scattering 1964
45. Liquid scintillator anticoincidence guard 1964
46. Large-area liquid scintillation detector slab 1966
47. System for recording signal amplitudes and waveforms from a large scintillation counter hodoscope 1966
48. Charge conservation and the lifetime of the electron 1965
49. Deep mines & outer space 1965
50. Evidence for high-energy cosmic-ray neutrino interactions 1965
51. Interaction of muons produced by atmospheric neutrinos 1965
52. Evidence for high-energy cosmic ray neutrino interactions 1965
53. Experimental test of baryon conservation and neutrino flux limits 1965
54. A new measurement of the reaction [neutrino plus proton goes to positron plus neutron] 1965
56. Inverse beta-decay 1965
57. Neutrino and muon measurements 10,000 feet underground 1965
58. Proposed solar neutrino experiment 1965
59. New approach to the detection of solar neutrinos via inverse beta decay 1965
60. Neutrinos from the atmosphere and beyond 1966
61. The Case-Witwatersrand underground neutrino program 1966
62. System for recording signal amplitudes and waveforms from a large-area scintillation counter hodoscope 1966
63. Large area liquid scintillation detector slab 1966
64. Search for solar and cosmic gamma rays 1966
65. Fission-antineutrino interaction with protons 1966
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68. The Case-Witwatersrand underground neutrino program 1966
69. The Case neutrino program 1966
70. Experimental test of baryon conservation 1967
71. High energy neutrinos underground: Status of the Case-Wits-Irvine experiment and future prospect 1967
72. L'astronomie des neutrinos 1967
73. The search for the solar neutrino 1967
74. Muon decay deep underground 1968
75. Measurements of interactions of cosmic-ray neutrinos 1968
76. Neutrino experiments at reactors 1968
77. Brief remarks on approaches to solar neutrino detection 1968
78. High energy neutrinos underground 1968
79. Informal status report on Case-Wits-Irvine cosmic ray neutrino experiment 1969
80. Cosmic rays and weak interactions - a critical review of the experimental status 1969
81. Search for a neutral weak interaction via [neutrino] dissociation of deuterons 1969
82. Electron antineutrino interaction with deuterons 1969
83. Cosmic-ray muon intensity deep underground versus depth 1970
84. Physical sciences - outlook for the 70's 1970
85. Upper limit for elastic scattering of electron antineutrinos by electrons 1970
86. Cosmic ray neutrino experiment 1970
87. The Case-Wits-Irvine neutrino experiment/ cosmic ray neutrino experiment 1970
88. Neutrino physics program: Elastic scattering, test of multiplicative law, measurement of neutrino flux, inverse beta decay February 1972
110. High-energy gamma rays from spontaneous fission of 238Uranium 1973
111. The solar neutrino problem - a progress report 1973
112. Fragment - mass ratios in 252Cf fission versus prompt gamma ray energy 1973
113. Neutrino 1974
114. Participatory lecture demonstration with an 83-ton bar electromagnet 1973
116. Stability of the neutrino 1974
117. Baryon-conservation limit 1974
118. Test of the Pauli exclusion principle for atomic electrons 1974
119. Some considerations for a small scale model of the [neutrino-electron elastic scattering] sandwich detector system 1974
120. Neutral-current limit and future prospect at a fission reactor 1974
121. [Neutrino-electron] scattering at low energies 1975
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125. DUMAND as a supernova neutrino detector 1975
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137. Cosmic-ray muon fluxes deep underground: intensity vs. depth, and the neutrino-induced component 1978
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<td>Chen (Herbert) obituary 1988</td>
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<td>Color scheme for spatial resolution using liquid scintillators, typescript circa 1963</td>
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<td>15, 122</td>
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<td>15, 139</td>
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<td>Deep underground measurements of cosmic ray muons and neutrinos, typescript circa 1970</td>
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<td>15, 140</td>
<td>Detection of electron antineutrino, electron scattering, drafts 1976</td>
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<tr>
<td>15, 141</td>
<td>The detection of neutrons with a large liquid scintillation counter, draft 1954</td>
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<td>15, 142</td>
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<td>15, 143</td>
<td>The detection of Pauli's neutrino, drafts circa 1994</td>
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<td>Detection of the elastic scattering of electron antineutrinos by electrons, draft 1969</td>
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box 15, folder 145  Detection of the free antineutrino, draft and final copy 1959
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box 15, folder 146  Detection of the free neutrino -- a confirmation, draft 1956
box 123, folder 10  Detection of the free neutrino, reprint from *The Physical Review*, Vol. 92, no. 3, 830-831 (first paper on neutrinos) 1953 November 1
box 15, folder 147  Detection of the neutrino, edited draft 1988
box 15, folder 148  The determination of total body radioactivity using liquid scintillation detectors, typescript with original photographs circa 1953
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box 16, folder 1  Electron antineutrino interaction with deuterons, draft and original figures circa 1969
box 123, folder 11  *Energy needs debate*, article in the Daily Pilot 1976 June 6
box 16, folder 2  *Encyclopedia of Physics* contributions on the neutrino 1972-1979
box 16, folder 3  Evidence for neutrino instability, edited drafts 1980
box 16, folder 4  The experimental status of baryon conservation, draft and reprint 1979
box 16, folder 5  Experimental test of baryon conservation, correspondence, draft and final copy 1966-1967
box 16, folder 6  Focused ultrasound modifies evoked responses from the brain as demonstrated in an *in vitro* hippocampal preparation, drafts and correspondence 1990
box 16, folder 7  The free antineutrino absorption cross section, United Nations publication 1958
box 16, folder 8  High energy neutrinos underground: status of the Case-Wits-Irvine experiment and future prospects, draft 1966
box 16, folder 9  Instrumentation and the Los Alamos spirit, draft, notes and correspondence 1992
box 16, folder 10  Inverse beta decay, draft 1963
box 16, folder 11  Large-area liquid scintillation detector slab, draft 1964
box 16, folder 12  A large Cerenkov detector, reprint and figures and Reines' copy with annotations 1961
box 16, folder 13  A large liquid scintillator for the detection of antineutrino reactions, draft 1964
box 16, folder 14  Large-volume liquid scintillators: their applications, original publication 1954
box 16, folder 15  Limits on nonconservation of baryon number, original publication 1979
box 16, folder 16  Limits on solar neutrino flux and elastic scattering, draft 1964
box 16, folder 17  *Methods of experimental physics*, typescripts of contributed chapters and illustrations circa 1961
box 16, folder 18  Neutral-current limit and future prospect at a fission reactor, annotated offprint 1974
box 16, folder 19  Neutrino, proofs 1961-1965
box 16, folder 20  Neutrino astronomy, annotated reprint and photocopy 1966
box 16, folder 21  Neutrino instability, draft 1980
box 16, folder 22  Neutrino instability -- inverse square test, annotated drafts 1976
box 16, folder 23  Neutrino interactions, reviews 1961
box 16, folder 24  Neutrino physics, original publication 1957
box 16, folder 25  Neutrinos from the atmosphere and beyond, annotated draft and original publication 1965-1966
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box 16, folder 26  Neutrinos, old and new, original publication 1963
box 16, folder 27  Neutrinos: past, present and future, final draft 1988
box 16, folder 28  Observation of SN1987A by neutrino light, original publication 1988
box 16, folder 29  On the conservation of baryon, notes 1970
box 123, folder 12  The Peaceful Atom 1947
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<td>16, 35</td>
<td>Reprints in English of 2 Reines articles from a Japanese periodical 1974</td>
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| 16, 36     | Science, a bridge of life, photocopy of article 1973  
Oriental publication, Seed: UCI alumni monthly 1973 |
| FB-34, 9   | Scintillation counters and luminescent chambers, proofs 1961 |
| 16, 37     | Search for antineutrino electron scattering, photocopy of handwritten draft and final copy 1972 |
| 16, 39     | The search for proton decay, correspondence and photographs 1983-1986 |
| 16, 40     | Second shock in liquid helium II?, reprint 1951 |
| 16, 41     | Strategic communication with neutrino beams, annotated draft 1978 |
| 16, 42     | System for recording signal amplitudes and waveforms from a large-area scintillation counter hodoscope, draft 1964 |
| 16, 43     | Tests of some conservation laws, correspondence, edited draft and original publication 1979-1980 |
| 16, 44     | Too many Ph.D.s?, typescript and handwritten draft 1971 |
| 16, 45     | Translation into Polish of an unidentified article by Reines, original publication 1962 |
| 16, 46     | Underground experiments on cosmic rays, correspondence and edited draft 1984-1985 |
| 16, 47     | Upper limit for elastic scattering of electron antineutrinos by electrons, annotated offprint 1970 |
| 16, 48     | Who needs science?, correspondence and original publication 1993 |


**Scope and Contents note**

This subseries contains primarily handwritten and typescript drafts of creative writing by Reines, who frequently jotted poems, stories, toasts, song lyrics, and other short pieces on scrap paper. Also included are several drafts for a collection of these creative writings that was gathered and edited for publication but never published.

**Arrangement note**

The subseries is arranged largely as it was found, since much of the material is undated.

<table>
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<tr>
<th>Box Folder</th>
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<td>123, 14</td>
<td>Air blast from atomic bombs, 1949, classified Secret, unclassified 1959 1949</td>
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| 16, 49-51, | Poetry, prose, lyrics, toasts, and fragments circa 1950-circa 1990  
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| FB-36, 2   | Rainbows and things: a pot pourri |
| 16, 52-54  | Rainbows and things: a pot pourri, drafts and fragments circa 1995 |
| 151, 3-4   | Rainbows and things: a pot pourri, manuscript circa 1995 |
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| 123, 16    | Rainbows and things: a pot pourri, returned manuscript from Writers' Representatives 1995 December 4 |
Data books Series 8. 1946-1991

General Physical Description note: no content

Series Scope and Content Summary
This series contains data books by Reines and other collaborators, students, and staff in his laboratories throughout his research career. The data books contain primarily data, analysis, protocols for data gathering, instructions for operating experimental machinery, and various notes. They represent the entire sweep of Reines' career as an experimentalist, from his work at Los Alamos Scientific Laboratory in the late 1940s to his involvement in the late 1980s with large multi-institutional collaborations such as Irvine-Michigan-Brookhaven (IMB) and Gamma Ray and Neutrino Detector (GRANDE).

Arrangement
This series is arranged roughly chronologically, although many of the data books were created and used at the same time and span multiple years.

Processing note
Researchers interested in specific experiments or collaborations will find additional information relating to research goals, data, and data analysis in Series 9. Experiments and Series 10. Collaborations. Analyzed and published data relating to these data books can be found in Series 7. Publications and writings, and filed under "Dissemination" in Series 9. Experiments and Series 10. Collaborations

box 17
Chemistry (Reines) 1946-1953
box 17
Book 7, film readings (Reines/Cowan) 1954-1955
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Survey detector (Reines) 1954
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R-18 (Reines) 1953
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Notebook 2, personal (Reines) 1953-1956
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General Physical Description note: 5 items.

box 22
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Neutrino experiment detector tank log, SRP (Reines/Cowan) 1956
box 24
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SRP-3, film readings (Reines/Cowan) 1956
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SRP-1, physical data (Reines/Cowan) 1956
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SRP-2, calibration data (Reines/Cowan) 1956
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SRP-4, film reading (Reines/Cowan) circa 1956
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SRP-5, graphs, curves, etc. derived mainly from film reading (Reines/Cowan) circa 1956
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SRP-6, film reading (Reines/Cowan) circa 1956
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SRP-8, graphs, follows SRP-5 (Reines/Cowan) circa 1956
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box 32 R-339 (Reines/Frye) 1959
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box 34 R-340 (Reines/Frye), continued from R-325 1958-1959
box 125 Particle detector notebook, Case Institute of Technology 1959-1966
box 115 Loose sheets from notebook 1959-1966
box 34 SRP-1 (Reines/Jenkins), Case Neutrino Group 1962
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box 35 Charles Giamati notebook 1959-1961
box 35 SRP-4 (Reines/Jenkins/Kinard) 1965-1966
box 126 R-14 Los Alamos (Reines) 1950s
box 36 Book no. I-1 (Reines) 1963
box 36 Reines/Brooks notebook 1967
box 36 Data notebook with note from M. Moe circa 1965
box 37 SRP-3 (Reines/Jenkins), Case Neutrino Group 1963-1965
box 124 Frank Nezrick's record of graduate thesis record 1961-1963
box 38 Data notebook 1963
box 38 Case-Wits ERPM neutrino experiment, book 1 1964-1965
box 38 Case-Wits neutrino experiment, surface station N.P.R.U. 1966-1968
box 39 Book 2 1965
box 124 Solar neutrinos, University of California, Irvine 1968-1976
box 40 Case-Wits neutrino experiment, book 4 1965-1967
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box 42 Procedures manual (Crofoot) 1982-1986
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box 43, box 44 No. 6-No. 10 1982
box 45 General Physical Description note: 5 items.
box 45, box 46, box 47, box 48 No. 11 1982-1983
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<td>box 59, folder 5</td>
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<td>box 59, folder 6</td>
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<td>box 59, folder 7</td>
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**Experiments Series 9. 1943-1997**

General Physical Description note: no content

Series Scope and Content Summary

This series includes correspondence, proposals, publications, photographs and slides, notes and notebooks, technical drawings, and reports relating to experiments conducted by Reines and members of his neutrino group throughout his career. The series includes information on Reines' well-known experiments verifying the existence of the neutrino and exploring its properties, which utilized neutrinos produced by nuclear reactors. The primary sites for these experiments were Los Alamos National Laboratory (New Mexico), Hanford (Washington), and the Savannah River Plant (South Carolina). Also included are materials relating to experiments that did not have to do with verification of the neutrino, such as the Eniwetok atoll nuclear tests, photoelectric hygrometer, nuclear emulsions, beta decay and double beta decay, conservation of baryon number, charge conservation and the stability of the electron, gravitational constant, tactile vision experiments, and ultrasound and brainwave experiments. Most of these experiments took place at Los Alamos National Laboratory, Case Institute of Technology, or UCI.

Arrangement

This series is arranged chronologically within broad topical groupings of material.

Researchers interested in determining chronological periods for various significant groupings of experiments in which Reines engaged should consult the table of contents for the volume of collected papers entitled *Neutrinos and other matters: selected works of Frederick Reines* (World Scientific, 1991), which is available in the cataloged book collections of the UC Irvine Libraries.

Restrictions

This series includes audio-visual materials and glass slides that are restricted.

Processing note


**Audio-visual materials, discussion by Reines and others of neutron electron scattering, audiocassette 1969**

Conditions Governing Access note

Original audiocassette restricted, use copy must be used by researchers.

**Balloon flight experiment, Los Alamos, New Mexico, photographs and new report 1959 March 16**
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<td>File includes graphs, tables, notes, and reports.</td>
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<td>Dissemination 1945-1997</td>
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<td>File includes drafts, clippings, transparencies and other illustrations, articles, dissertations, and handwritten notes.</td>
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<td>Engineering and equipment files 1953-1988</td>
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<td>box 85, folder 14</td>
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<td>File includes correspondence, drawings, manuals, procedures, and brochures.</td>
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<td>Oversize technical drawings 1953-1976</td>
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<td>box 85, folder 13</td>
<td>Financial records, includes budgets, correspondence, and invoices 1954-1987</td>
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<td>box 85, folder 14</td>
<td>Glass slides circa 1950-circa 1965</td>
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<td>Glass slides substantially duplicate images available in photographs and slides in the Experiments and Collaborations series (Series 9 and 10).</td>
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<tr>
<td>box 85, folder 14</td>
<td>Access to glass slides is restricted. Researchers who require the use of these slides should consult with the Head of Special Collections and Archives or the Manuscripts Librarian.</td>
</tr>
<tr>
<td>box 85, folder 15</td>
<td>Los Alamos Scientific Laboratory file 1946-1957</td>
</tr>
<tr>
<td>box 85, folder 16</td>
<td>Scope and Contents note</td>
</tr>
<tr>
<td>box 85, folder 16</td>
<td>File includes discussion and recommendations of the Committee on Loyalty and Security of the Federation of American Scientists in response to the Wright Commission report.</td>
</tr>
<tr>
<td>box 85, folder 17-18</td>
<td>Meeting minutes and notes 1952-1987</td>
</tr>
<tr>
<td>box 85, folder 17-18</td>
<td>Notebooks</td>
</tr>
<tr>
<td>box 85, folder 19</td>
<td>Brain research 1980</td>
</tr>
<tr>
<td>box 85, folder 18-19</td>
<td>Cosmic ray experiments underground (Reines and Frye) 1957-1959</td>
</tr>
<tr>
<td>box 85, folder 19</td>
<td>High-altitude experiments at Los Alamos 1958-1959</td>
</tr>
<tr>
<td>box 86, folder 1</td>
<td>Journal documenting trip from Hanford to Savannah River Plant 1955</td>
</tr>
<tr>
<td>box 86, folder 2</td>
<td>Ultrasound 1986-1988</td>
</tr>
<tr>
<td>box 86, folder 3-13, box 127, folder 3</td>
<td>Notes, uncategorized, primarily handwritten by Reines on a variety of topics 1948-1995</td>
</tr>
<tr>
<td>box 86, folder 3-13, box 127, folder 3</td>
<td>Scope and Contents note</td>
</tr>
<tr>
<td>box 86, folder 3-13, box 127, folder 3</td>
<td>File includes information on solar neutrinos, neutrino physics, baryon conservation, elastic scattering, proton decay, neutrino oscillations, and other topics.</td>
</tr>
<tr>
<td>box FB-60, folder 1</td>
<td>Oversize material circa 1950-1969</td>
</tr>
<tr>
<td>box 127, folder 2</td>
<td>Graphs, experiment unnamed undated</td>
</tr>
</tbody>
</table>
Experiments Series 9.1943-1997

box 86, folder 14
box 86, folder 16-19

Notes on spontaneous fission 1943-1947

Personnel files 1946-1981

Conditions Governing Access note

Access to UC personnel material in this file (4 folders) is restricted until 2010-01-01, 2027-01-01, 2029-01-01, and 2032-01-01.

box 86, folder 20, box 87, folder 1-6, box 157, folder 1, folder 7-12, box 127, folder 4, box 87, folder 13-15
box 87, folder 16-18, box 87, folder 19

Photographs and slides circa 1950-circa 1990

box 86, box 87, folder 7-12, box 87, folder 16-18

Proposals and reports relating to research programs and funding 1954-1995

box 87, box 127, folder 4

Proton disintegration experiment in salt mine in Ohio 1960s

Publications and other materials by others relating to experiment research objectives 1953-1990

box 86, box 87, box 157, box 127, box 87, box 87

Reports

Hanford daily reports and transcripts 1952-1953

box 86, box 87, box 157

Savannah River Plant monthly progress reports 1954-1957

Collaborations Series 10. 1952-1995

General Physical Description note: no content

Series Scope and Content Summary

This series includes correspondence, notes, publications, photographs and other materials relating to the multi-institutional collaborations in which Reines participated during the latter part of his career, either as a scientist or spokesperson. Collaborations denote a group of scientists from various institutions working together for a particular scientific objective, and in some cases may be centered around a particular research facility or site.

Arrangement


Restrictions

This series includes audio and video materials. Access to originals is restricted; researchers must request viewing/listening copies of restricted materials.

Processing note

Researchers will find information about experiments conducted by Reines and his colleagues and students throughout his career in Series 9. Experiments. Additional materials relating to multi-institutional collaborations in which Reines was involved can be found in Series 6. Correspondence file, Series 7. Publications and writings, and Series 8. Data books.

Scope and Contents note
This subseries includes correspondence, telex printouts, proposals, publications, lectures and transparencies, data files, photographs and slides, notes and notebooks, technical drawings, and reports relating to Reines' first major collaboration--initiated while he was at Case Institute of Technology and continued after his move to UCI--with the University of Witwatersrand near Johannesburg, South Africa. The purpose of the collaboration was to pursue underground detection of neutrinos produced by cosmic ray interactions in the atmosphere using a large-area liquid scintillation detector located in a gold mine approximately 2 miles below the Earth's surface near Johannesburg on the property of the East Rand Proprietary Mine (ERPM). This collaboration resulted in 1965 in the first detection of neutrinos produced in the atmosphere and was the clear antecedent of several later massive underground experiments that dramatically increased scientific knowledge about the properties of neutrinos.

Arrangement note
This subseries is arranged chronologically within broad topical groupings of material.

Correspondence 1962-1978
Scope and Contents note
File includes correspondence relating to the possible location of Reines' underground neutrino detection experiments in the Kolar Gold Fields in India, as well as correspondence and clippings relating to the US Atomic Energy Commission's reluctance to fund research in South Africa

Data, analysis 1965-1977
Data, events 1966-1971

Oversize material circa 1968

Data, notebooks and accompanying documents 1964-circa 1980
Oversize data notebook photocopies 1964-1966
Oversize material circa 1968

Discussion of external water shield measurements (Kropp, Gurr, and Reines), audiocassette circa 1965

Conditions Governing Access note
Original audiocassette restricted, use copy must be used by researchers.

Dissemination 1962-1989
Scope and Contents note
File includes drafts, clippings, transparencies and other illustrations, articles, and handwritten notes.

Oversize matted watercolors illustrating underground neutrino detector concept circa 1962-circa 1965

General Physical Description note: 4 items.

East Rand Proprietary Mine (ERPM; Johannesburg, South Africa), brochures, maps, technical pamphlets, and photographs and other materials from a dedication ceremony for a plaque commemorating the discovery of natural neutrinos 1952-1967

Oversize maps 1952, 1966

Engineering and equipment files 1962-1967
Oversize material 1963-1967

Plans for solar detector 1964

Financial records, includes budgets, correspondence, and invoices 1966-1979

Ephemera relating to South Africa circa 1963-1971

Oversize material circa 1966-1971

Neutrino group meeting minutes 1964-1969

Notebook I-XII 1963-1967

Scope and Contents note

File includes primarily correspondence, data and analysis, notes, and daily reports from ERPM. Notebook II is primarily dictaphone transcriptions of daily reports.

Oversize material 1965-1966

Notebooks, unnumbered 1968

Scope and Contents note

File is a continuation of numbered notebooks.

Notebooks, telex chronological file 1963-1971

Scope and Contents note

File contains telex printouts of almost daily discussions between various members of the collaboration team spread out between Ohio, California, and South Africa. Significant gaps for which no telex printouts exist include Aug. 1967-Feb. 1968.

Notes, uncategorized, primarily handwritten by Reines on a variety of topics 1961-1982

Notes on baryon stability 1976-1981

Photograph album created for Reines by Gus Hruschka 1967

Photographs and slides 1963-1970

Oversize photographs 1963-1970

Proposals 1967-1972

"Dr. Reines' cosmic ray neutrino experiment" 1963-1971

Publications by others on topics related to CWI research goals 1963-circa 1964

Scope and Contents note

File includes information on Kolar Gold Field (India) underground experiments.
Subseries 10.2. Irvine-Michigan-Brookhaven (IMB) 1960-1995

Scope and Contents note
This subseries includes correspondence, research memoranda, proposals, publications, lectures and transparencies, photographs, notes and notebooks, and operations manuals relating to the Irvine-Michigan-Brookhaven collaboration, which grew out of Reines' growing interest in baryon number violation in the 1970s following the advent of the Grand Unified Theories. This interest led to the establishment of a very large collaborative effort to search for proton decay. The site for this experiment was an 8,000-metric-ton water Čerenkov detector in a salt mine near Cleveland, Ohio, a location at which Reines and colleagues from Case had conducted experiments during the 1960s. By the time the collaborative work was completed in 1991 this effort had set the lowest limits on proton lifetime at the time, obtained preliminary evidence for neutrino oscillation, and made the serendipitous discovery of a neutrino burst from Supernova 1987A. Observations from the IMB detector helped to confirm the role of neutrinos in stellar collapse and set in motion the field of neutrino astronomy.

Arrangement note
This subseries is arranged chronologically within broad topical groupings of material.

Agreements between University of California and University of Michigan and with IMB contractors, includes correspondence 1975-1986

Collaboration meeting materials, includes minutes, exhibits, and discussion notes 1979-1993

Construction documents 1974-1982

Consultant report on civil engineering aspects of detector design 1980

Correspondence 1960-1994

Data and analysis, includes plot graphs, deleted scan sheets, and tape logs 1974-1991

Dissemination 1978-1995

DOSCO phone conversation with Reines and others, audiocassettes 1979

Financial records, includes budget proposals, financial reports, correspondence, and invoices 1975-1988

Guide to the Frederick Reines papers MS.F.007
Subseries 10.2. Irvine-Michigan-Brookhaven (IMB) 1960-1995

Guidance to the Frederick Reines papers MS.F.007

Memoranda regarding research development and policies 1979-1991

Oversize materials 1985

Message to Larry Sulak, drafts 1987

Mine personnel information and safety training materials 1980-1989

Notes, uncategorized, primarily handwritten by Reines on a variety of topics 1960-1990

Notebooks on baryon (in)stability and proton decay 1978-1980

Personnel files, collaborator lists 1980-1990

Photographs, slides, and other visual materials circa 1979-circa 1985

Oversize photographs circa 1985

Photomultiplier tube (PMT) cover circa 1984

Proposal for a Nucleon Decay Detector 1979

Proposals for the Department of Energy 1979-1981

Proton decay, detector file and manual 1979-1991

Publications and other materials by others relating to proton decay and IMB research objectives 1970-1993

Subseries 10.3. Deep Underwater Muon and Neutrino Detector (DUMAND) 1957-1994

Scope and Contents note

This subseries includes correspondence, research memoranda, proposals, publications, lectures and transparencies, photographs, notes and notebooks, and operations manuals relating to a collaboration involving UCI, University of Hawaii and many other academic institutions. The DUMAND Collaboration designed and tested a series of prototype high-energy neutrino astronomy detectors for the open ocean floor in the Hawaiian Islands that were primarily intended to utilize the ocean to eliminate as much as possible cosmic ray interference in the study of the neutrino. Reines was instrumental in providing long-term guidance for the endeavor and shepherding it through long years of initial groping to sort out the research potential. The DUMAND collaboration was guided by a steering committee, of which Reines was a member, which solicited and reviewed research proposals from collaborating institutions and hosted numerous workshops on issues and instrumentation relating to the collaboration's research goals.

Arrangement note

This subseries is arranged chronologically within broad topical groupings of material.

Collaboration and steering committee meeting files, includes agendas and minutes 1975-1988

Correspondence and memoranda 1966-1994

Oversize material 1986

Deep Underwater Muon and Nutrino Detection, copy of transparencies and report 1979

Dissemination 1974-1994

Scope and Contents note

File includes reports, articles, proceedings, news clippings, press releases, and presentation transparencies.
<table>
<thead>
<tr>
<th>Box/Folder Details</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>box FB-32, folder 8</td>
<td>DUMAND array validation schematics circa 1981</td>
</tr>
<tr>
<td>box FB-32, folder 10-11</td>
<td>DUMAND master copy of funding proposal 1975</td>
</tr>
<tr>
<td>box AV-005, cassette MS-F07-V005</td>
<td>Engineering discussion for DUMAND components, SRP move, and neutral current components, VHS videocassette 1986</td>
</tr>
<tr>
<td>box 76, folder 16</td>
<td>Financial files, includes primarily UCI budget materials 1976-1983</td>
</tr>
<tr>
<td>box FB-51</td>
<td>Integrated circuit, design of which was a major UCI contribution to DUMAND circa 1978</td>
</tr>
<tr>
<td>box 76, folder 17</td>
<td>Learned, John, file maintained by Reines includes correspondence, personnel files, and draft writings 1976-1977</td>
</tr>
<tr>
<td>box 77, folder 1</td>
<td>Newsletters 1974-1985</td>
</tr>
<tr>
<td>box 77, folder 3-4</td>
<td>Notes, uncategorized, primarily handwritten by Reines on a variety of topics 1970-1984</td>
</tr>
<tr>
<td>box 77, folder 5</td>
<td>Photographs circa 1975-circa 1985</td>
</tr>
<tr>
<td>box 127, folder 9</td>
<td>Proposal for a HEXAGONAL ARRAY, by John Learned 1986</td>
</tr>
<tr>
<td>box 77, folder 6, box 78, folder 1</td>
<td>Proposals for DUMAND funding and research projects 1973-1988</td>
</tr>
<tr>
<td>box 78, folder 2-6, box 127, folder 12, box 78, folder 7-8, box FB-32, folder 8, box AV-005, cassette MS-F07-V003, MS-F07-V004</td>
<td>Publications by others relating to DUMAND research objectives 1957-1988</td>
</tr>
<tr>
<td>box 78, folder 9-14</td>
<td>RUWS (Remote Unmanned Work System) files 1968-1976</td>
</tr>
<tr>
<td>box 78, folder 15</td>
<td>Oversize material 1976</td>
</tr>
<tr>
<td>box 78, folder 16</td>
<td>Short Prototype String (SPS) deployment at sea 1987</td>
</tr>
<tr>
<td>box 78, folder 17</td>
<td>Workshop files, includes correspondence, planning documents, photographs, and presentations 1975-1984</td>
</tr>
<tr>
<td>box 78, folder 16</td>
<td>DUMAND symposium, Khabarovsk, USSR 1978-1979</td>
</tr>
</tbody>
</table>

### Subseries 10.4. Los Alamos Meson Physics Facility (LAMPF) 1968-1990

**Scope and Contents note**

This subseries includes advisory committee materials, budget information proposals, notes, slides, and correspondence relating to a collaboration that proposed and constructed a small experimental facility at Los Alamos National Laboratory in order to facilitate intermediate energy physics research. Reines was involved in this project in its preliminary stages, but the impetus for this project came from his physics group, primarily Henry Chen. Reines’ physics group was particularly involved in conducting neutrino electron elastic scattering experiments at LAMPF.

**Arrangement note**

This subseries is arranged chronologically within broad topical groupings of material.
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>box 78, folder 18</td>
</tr>
<tr>
<td>box 78, folder 19</td>
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<td>box 78, folder 20</td>
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<tr>
<td>box 78, folder 21</td>
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<td>box 78, folder 22</td>
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<tr>
<td>box 78, folder 23, 24</td>
</tr>
<tr>
<td>box 79, folder 1-3</td>
</tr>
<tr>
<td>box 79, folder 4</td>
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<tr>
<td>box 79, folder 5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Subseries 10.5. Gamma Ray and Neutrino Detector (GRANDE) 1986-1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope and Contents note</td>
</tr>
<tr>
<td>This subseries includes correspondence, meeting materials, publications and transparencies, proposals, progress reports, and slides documenting a collaborative effort arising out of Reines' UC Irvine physics group to situate a detector to study solar neutrinos in an Arkansas lake. The GRANDE proposal arose from Reines' frustration with the slow rate of progress being made with DUMAND and owes much of its origins to work done in both the IMB and DUMAND collaborations. GRANDE was never actualized and the majority of the materials in this subseries document the conceptualization and planning effort, including detailed responses to issues raised by reviewers of GRANDE funding proposals.</td>
</tr>
<tr>
<td>Arrangement note</td>
</tr>
<tr>
<td>This subseries is arranged chronologically within broad topical groupings of material.</td>
</tr>
</tbody>
</table>

| box 79, folder 6-12 | Collaboration meeting materials 1987-1989 |
| box 79, folder 13  | Correspondence 1986-1991 |
| box 79, folder 15  | File includes articles and drafts, press releases, and transparencies. |
| box 79, folder XOS 1 | Engineering consultant materials 1989 |
| box 79, folder 16-17 | Oversize materials circa 1986 |
| box 79, folder 18, 19 | Memoranda regarding research development and policies 1987-1990 |
| box 80, folder 1    | Proposals and progress reports 1987-1991 |
| box 80, folder 2    | Research materials from related projects, gamma ray astrophysics meeting in Hawaii 1988 |
| box 80, folder 3    | Slides 1988 |
**Subseries 10.6. Sudbury Neutrino Observatory (SNO) 1984-1994**

**Scope and Contents note**
This subseries includes correspondence, meeting materials, publications, clippings, presentations, proposals, and financial materials documenting a proposed collaboration organized by Reines' UC Irvine colleague Henry Chen to construct a heavy water neutrino detector deep underground in a nickel mine near Sudbury, Ontario. The detector would act as a solar neutrino observatory that would facilitate the investigation of astrophysical processes. Reines reluctantly agreed to act temporarily as principal investigator following Chen's untimely death in 1987, but within a year reached the decision to withdraw UCI from the collaboration. The bulk of the material in this subseries documents preliminary development of the collaboration, site selection, and organization of the startup of the research.

**Arrangement note**
This subseries is arranged chronologically within broad topical groupings of material.

- box 80, folder 4: Correspondence 1987-1989
- box 80, folder 5: Dissemination 1986-1994
- box 80, folder 6: Financial records and related correspondence and notes 1984-1990
- box 80, folder 7: Meeting minutes 1988
- box 80, folders 8-10: Proposals 1985-1989
- box 80, folder 11: Publications by others related to solar neutrinos 1993

**Funding agency files Series 11. 1959-1994**

**General Physical Description note**: no content

**Series Scope and Content Summary**
This series contains correspondence, funding applications and proposals, agreements, project status reports, trip reports, notes, and budget and financial materials relating to funding for experiments and collaborations undertaken by Reines and his neutrino group over a period of about 30 years. Funding for Reines' research came primarily from United States government agencies such as the Atomic Energy Commission (AEC), Department of Energy (DOE), National Science Foundation (NSF), Energy Research and Development Administration (ERDA), and Office of Naval Research.

**Arrangement**
This series is arranged chronologically.

**Processing note**
Additional information relating to funding from these and other agencies can be found in Series 6. Correspondence file, Series 9. Experiments, and Series 10. Collaborations.
<table>
<thead>
<tr>
<th>Box and Folder</th>
<th>Dates</th>
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<tr>
<td>box 81, folder 2</td>
<td>1971 1971</td>
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<td>1972-1973 1972-1973</td>
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<td>1974 1974</td>
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<td>1976 1976</td>
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<tr>
<td>box 82, folder 16</td>
<td>1992 1992</td>
</tr>
<tr>
<td>box 82, folder 17</td>
<td>1994 1994</td>
</tr>
</tbody>
</table>

**Personal and biographical Series** 12. **1907-2001 and undated 1940-1999**

**Series Scope and Content Summary**

This series consists of documents and books of personal or biographical significance to Reines. Included in the series are government documents, poetry, books, biographical sources, personal correspondence (including sympathy correspondence sent to Sylvia Reines upon Frederick Reines' death), personal notes, as well as material annotated by Reines' son Robert that provide evidence of the personal life and interests of Frederick Reines.

- Box 138, folder 7: "A Limerick for Fred," by neighbors of Reines 1996
- Box 128, folder 9: Biographical clippings 1966-1998
- Box 5, folder 54: Biographical dictionaries, correspondence, and citations 1975-1997
- Box 134, box 136, box 135: Books

- Barse, Horace H., Toasts and After-Dinner Stories (New York: Barse & Hopkins, ca. 1907).

**General**

"From Mother and Father" written on front endpapers.

Fermi, Enrico, Nuclear Physics: a course given by Enrico Fermi at the University of Chicago (Chicago: University of Chicago Press, 1950). 1950
Reines, Frederick, The Neutrino: from Poltergeist to Particle (Sweden: Les Prix Nobel 1995; reprint).

"Sept '45, F. Reines, Los Alamos" written on front endpaper.


Scope and Content Summary
Brief information and photo packets for the dedication of Reines Hall, the Nobel Prize, and historic pictures of Reines 1998
Includes letter from Gary Chanan, Chair of the Department of Physics and Astronomy, regarding memorial held in Reines' honor.

Certificates for travel across the equator and to Israel 1958-1965
Correspondence about and from family
Travel diary 1961
Family records relating to Reines' parents 1956-1958
"Fred Things," with annotations by his son Robert undated
Membership cards and IDs 1963-1980

MENSA IQ test and notes undated
Sympathy correspondence sent to Mrs. Reines 1998

Obituaries 1998
Passports 1958-1976

Personal notes kept in pocket undated
Reines Vista, pamphlet 2001
Selective Service correspondence and cards 1940-1947
Visiting Fred Reines (in the hospital) 1995 October 17
Vitae, lists of publications, and security questionnaires 1969-1998


Audio and visual material Series 13. 1955-2000 and undated

Series Scope and Content Summary
This series consists of audiorecordings, videorecordings, photographic materials, and other visual materials primarily documenting Reines' professional career, including award ceremonies, lectures, conferences, and research project documentation. Included also are personal photographs, slides, scrapbooks, and audio and video recordings of Reines' travel and family life.

Audio
Conferences and news stories 1966-1982

Access
Access to archival originals is restricted; researchers must use listening copy.

Physical Characteristics and Technical Requirements
Archival originals consist of 24 sound cassettes (1082 mins.): analog. Duplicating masters and listening copies consist of 24 sound discs(CD-ROM)(1082 min.): digital.

Press conference, Washington, DC (UCI-T1) 30 April 1980
Frederick Reines interviews (UCI-T2) 1974, 1975
Archival originals
Physical Description: 2 audio cassettes (114 minutes).

Duplicating masters
Physical Description: 2 compact discs (CDs), 114 minutes.

Use copies
Physical Description: 2 compact discs (CDs), 114 minutes.

WITS meeting (UCI-T3) 2 December 1967
Archival originals
Physical Description: 3 audio cassettes (183 minutes).

Duplicating masters
Physical Description: 3 compact discs (CDs), 183 minutes.

Use copies
Physical Description: 3 compact discs (CDs), 183 minutes.

F. Reines, UC Irvine, Dumand (UCI-T4) undated
Archival original
Physical Description: 1 audio cassette (6 minutes).

Duplicating master
Physical Description: 1 compact disc (CD), 6 minutes.

Use copy
Physical Description: 1 compact disc (CD), 6 minutes.

Physics Club, part I and II (UCI-T5) 4 December 1966
Archival original
Physical Description: 1 audio cassette (61 minutes).

Duplicating master
Physical Description: 1 compact disc (CD), 61 minutes.

Use copy
Physical Description: 1 compact disc (CD), 61 minutes.

Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.1) May 1987
Archival original
Physical Description: 1 audio cassette (60 minutes).
Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.2) May 1987
Archival original
Physical Description: 1 audio cassette (63 minutes).

Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.3) May 1987
Archival original
Physical Description: 1 audio cassette (11 minutes).

Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.4) May 1987
Archival original
Physical Description: 1 audio cassette (61 minutes).

Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.5) May 1987
Archival original
Physical Description: 1 audio cassette (46 minutes).

Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.6) May 1987
Archival original
Physical Description: 1 audio cassette (50 minutes).
Audio and visual material Series 13.1955-2000 and undated

Guide to the Frederick Reines papers MS.F.007

box 161, disk T006.6-M

**Duplicating master**
Physical Description: 1 compact disc (CD), 50 minutes.

box 161, disk T006.6-U

**Use copy**
Physical Description: 1 compact disc (CD), 50 minutes.

---

**Symposium on the Transfer of Technology from Wartime Los Alamos to Peacetime Research, tape 1 (UCI-T6.7) May 1987**

Archival original
Physical Description: 1 audio cassette (60 minutes).

---

**Fragments I (UCI-T7) 1969**

Archival original
Physical Description: 1 audio cassette (10 minutes).

---

**Fragments II (UCI-T8) 16 July 1972**

Archival original
Physical Description: 1 audio cassette (20 minutes).

---

**Neutrino Experiments at a Savannah River Reactor (UCI-T-9) 15 September 1976**

Archival original
Physical Description: 1 audio cassette (70 minutes).

---

**F. Reines (UCI-T10) undated**

Archival original
Physical Description: 1 audio cassette (33 minutes).
Use copy
Physical Description: 1 compact disc (CD), 33 minutes.

Savannah River Plant Reactor (UCI-T11) 12 November 1969
Archival original
Physical Description: 1 audio cassette (63 minutes).

Duplicating master
Physical Description: 1 compact disc (CD), 63 minutes.

Use copy
Physical Description: 1 compact disc (CD), 63 minutes.

PDK phone conference (UCI-T12) 27 January 1982
Archival original
Physical Description: 1 audio cassette (62 minutes).

Duplicating master
Physical Description: 1 compact disc (CD), 62 minutes.

Use copy
Physical Description: 1 compact disc (CD), 62 minutes.

Lectures on neutrinos and other topics
Access
Access to archival originals is restricted; researchers must use listening copy.

Physical Characteristics and Technical Requirements
Archival originals consist of 22 sound tape reels (41 hours) : analog, 3 3/4 playing speed, 1/4 inch reel to reel. Duplicating masters and listening copies consist of 47 sound discs (CD-ROM)(41 hours) : digital.

Western White House, "Conference on Solar Neutrinos" (UCI-1.1) undated
Archival original
Physical Description: 1 sound tape reel (125 minutes).

Duplicating masters
Physical Description: 2 compact discs (CDs), 125 minutes.

Use copies
Physical Description: 2 compact discs (CDs), 125 minutes.

Western White House, "Conference on Solar Neutrinos" (UCI-1.2) undated
Archival original
Physical Description: 1 sound tape reel (170 minutes).

Duplicating masters
Physical Description: 3 compact discs (CDs), 170 minutes.

Use copies
Physical Description: 3 compact discs (CDs), 170 minutes.

Western White House, "Conference on Solar Neutrinos" (UCI-1.3) undated
Archival original
Physical Description: 1 sound tape reel (29 minutes).
Audio and visual material Series 13.1955-2000 and undated

Guide to the Frederick Reines papers MS.F.007

box 168, disk 001.3-M  
**Duplicate master**  
Physical Description: 1 compact disc (CD), 29 minutes.

box 169, disk 001.3-U  
**Use copy**  
Physical Description: 1 compact disc (CD), 29 minutes.

box 162, reel 002.1-A  
The Neutrino: From Poltergeist to Particle (UCI-2.1) undated  
**Archival original**  
Physical Description: 1 sound tape reel (36 minutes).

box 168, disk 002.1-M  
**Duplicate master**  
Physical Description: 1 compact disc (CD), 36 minutes.

box 169, disk 002.1-U  
**Use copy**  
Physical Description: 1 compact disc (CD), 36 minutes.

box 163, reel 002.2-A  
The Neutrino: From Poltergeist to Particle (UCI-2.2) undated  
**Archival original**  
Physical Description: 1 sound tape reel (37 minutes).

box 168, disk 002.2-M  
**Duplicate master**  
Physical Description: 1 compact disc (CD), 37 minutes.

box 169, folder 002.2-U  
**Use copy**  
Physical Description: 1 compact disc (CD), 37 minutes.

box 163, reel 002.3-A  
The Neutrino: From Poltergeist to Particle (UCI-2.3) undated  
**Archival original**  
Physical Description: 1 sound tape reel (6 minutes).

box 168, disk 002.3-M  
**Duplicate master**  
Physical Description: 1 compact disc (CD), 6 minutes.

box 169, disk 002.3-U  
**Use copy**  
Physical Description: 1 compact disc (CD), 6 minutes.

box 163, reel 003-A  
Neutrino Astronomy (UCI-3) undated  
**Archival original**  
Physical Description: 1 sound tape reel (70 minutes).

box 168, disk 003-M  
**Duplicate master**  
Physical Description: 1 compact disc (CD), 70 minutes.

box 169, disk 003-U  
**Use copy**  
Physical Description: 1 compact disc (CD), 70 minutes.

box 163, reel 004-A  
**Reactar mini conference, UC Irvine (UCI-4) undated**  
**Archival original**  
Physical Description: 1 sound tape reel (295 minutes).

box 168, disk 004-M  
**Duplicate masters**  
Physical Description: 6 compact discs (CDs), 295 minutes.
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<th>Reel/Disk</th>
<th>Type</th>
<th>Physical Description</th>
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<td>Lepton Symmetry Seminar with Dr. S. Meshkov (UCI-5)</td>
<td>Undated</td>
<td>169</td>
<td>004-U</td>
<td>Use copies</td>
<td>6 compact discs (CDs), 295 minutes.</td>
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<tr>
<td>Songs by Arthur Roberts (UCI-6)</td>
<td>Undated</td>
<td>164</td>
<td>005-A</td>
<td>Archival original</td>
<td>1 sound tape reel (61 minutes).</td>
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<tr>
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<td></td>
<td>168</td>
<td>005-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 61 minutes.</td>
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<td></td>
<td>169</td>
<td>005-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 61 minutes.</td>
</tr>
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<td>Songs by Arthur Roberts (UCI-6)</td>
<td>Undated</td>
<td>164</td>
<td>006-A</td>
<td>Archival original</td>
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<td>168</td>
<td>006-M</td>
<td>Duplicating masters</td>
<td>2 compact discs (CDs), 89 minutes.</td>
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<td>169</td>
<td>006-U</td>
<td>Use copies</td>
<td>2 compact discs (CDs), 89 minutes.</td>
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<tr>
<td>Lecture on Theory of Weak Interactions (UCI-7)</td>
<td>Undated</td>
<td>164</td>
<td>007-A</td>
<td>Archival original</td>
<td>1 sound tape reel (86 minutes).</td>
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<td>168</td>
<td>007-M</td>
<td>Duplicating masters</td>
<td>2 compact discs (CDs), 86 minutes.</td>
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<td></td>
<td>169</td>
<td>007-U</td>
<td>Use copies</td>
<td>2 compact discs (CDs), 86 minutes.</td>
</tr>
<tr>
<td>Talk on Electron Situation (UCI-8)</td>
<td>Undated</td>
<td>164</td>
<td>008-A</td>
<td>Archival original</td>
<td>1 sound tape reel (64 minutes).</td>
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<td></td>
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<td>168</td>
<td>008-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 64 minutes.</td>
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<td>169</td>
<td>008-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 64 minutes.</td>
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<tr>
<td>Neutrino meeting (UCI-9) 13 January 1969</td>
<td></td>
<td>165</td>
<td>009-A</td>
<td>Archival original</td>
<td>1 sound tape reel (32 minutes).</td>
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<td>168</td>
<td>009-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 32 minutes.</td>
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<td>169</td>
<td>009-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 32 minutes.</td>
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<tr>
<td>Low Energy Neutrino Interactions (UCI-10)</td>
<td>Undated</td>
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<tr>
<td>box 165, reel 010-A</td>
<td>Archival original</td>
<td>1 sound tape reel (24 minutes).</td>
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<td>box 168, disk 010-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 24 minutes.</td>
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<td>box 169, disk 010-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 24 minutes.</td>
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<td>box 165, reel 011.1-A</td>
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<td>1 sound tape reel (39 minutes).</td>
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<td>box 168, disk 011.1-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 39 minutes.</td>
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<tr>
<td>box 169, disk 011.1-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 39 minutes.</td>
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<td>box 165, reel 011.2-A</td>
<td>Archival original</td>
<td>1 sound tape reel (44 minutes).</td>
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<td>box 168, disk 011.2-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 44 minutes.</td>
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<td>box 169, disk 011.2-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 44 minutes.</td>
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<tr>
<td>box 165, reel 011.3-A</td>
<td>Archival original</td>
<td>1 sound tape reel (59 minutes).</td>
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<tr>
<td>box 168, disk 011.3-M</td>
<td>Duplicating masters</td>
<td>2 compact discs (CDs), 59 minutes.</td>
<td></td>
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<tr>
<td>box 169, disk 011.3-U</td>
<td>Use copies</td>
<td>2 compact discs (CDs), 59 minutes.</td>
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<tr>
<td>box 165, reel 012-A</td>
<td>Archival original</td>
<td>1 sound tape reel (49 minutes).</td>
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<tr>
<td>box 168, disk 012-M</td>
<td>Duplicating master</td>
<td>1 compact disc (CD), 49 minutes.</td>
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<tr>
<td>box 169, disk 012-U</td>
<td>Use copy</td>
<td>1 compact disc (CD), 49 minutes.</td>
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<tr>
<td>box 166, reel 013-A</td>
<td>Archival original</td>
<td>1 sound tape reel (243 minutes).</td>
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<td>box 168, disk 013-M</td>
<td>Duplicating masters</td>
<td>4 compact discs (CDs), 243 minutes.</td>
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</table>
Lecture 5, Rainbows & Things (UCI-14) undated

Archival original

Physical Description: 1 sound tape reel (138 minutes).

Duplicating masters

Physical Description: 2 compact discs (CDs), 138 minutes.

Use copies

Physical Description: 2 compact discs (CDs), 138 minutes.

Lecture 6, Rainbows & Things (UCI-15) undated

Archival original

Physical Description: 1 sound tape reel (136 minutes).

Duplicating masters

Physical Description: 2 compact discs (CDs), 136 minutes.

Use copies

Physical Description: 2 compact discs (CDs), 136 minutes.

Lecture 10, Rainbows & Things (UCI-16) undated

Archival original

Physical Description: 1 sound tape reel (155 minutes).

Duplicating masters

Physical Description: 3 compact discs (CDs), 155 minutes.

Use copies

Physical Description: 3 compact discs (CDs), 155 minutes.

Lecture 7, Rainbows & Things (UCI-17) undated

Archival original

Physical Description: 1 sound tape reel (129 minutes).

Duplicating masters

Physical Description: 2 compact discs (CDs), 129 minutes.

Use copies

Physical Description: 2 compact discs (CDs), 129 minutes.

Lecture 8, Rainbows & Things (UCI-18) undated

Archival original

Physical Description: 1 sound tape reel (134 minutes).

Duplicating masters

Physical Description: 2 compact discs (CDs), 134 minutes.

Use copies

Physical Description: 2 compact discs (CDs), 134 minutes.

Physical Sciences reception and dance (UCI-19) October 1969
### Audio and visual material Series 13.1955-2000 and undated

#### Social evening, graduate students (UCI-20) August 1963
- **Archival original**
  - Physical Description: 1 sound tape reel (93 minutes).

#### Songs from Africa recorded from A.A. Hruschka (UCI-21) 6 October 1963
- **Archival original**
  - Physical Description: 1 sound tape reel (92 minutes).

#### Search for Neutrino, notes transcribed from tape recordings 1953
- **Personal sound recordings undated**
  - **Scope and Content Summary**
    - This file consists of audio recordings belonging to Reines, including music recorded from the radio, a recording of "The Weinberg theory of weak interactions" by Dr. S.Y. Lee, and a French language recording.

### Visual
#### Photographs of personal life
- **General photographs of personal life**
- **60th birthday party, UC Irvine 1978**
- **Family photographs from Nobel Prize trip 1995**
- **Photographs of Frederick Reines 1918-1996**
- **Baby photograph of Reines at six months of age 1918**
- **Undated portrait of young Reines ca. 1940**
- **Portraits and related photographs 1918-1996**
- **Robert Reines (son) and family in Thailand 1987**
Audio and visual material Series 13.1955-2000 and undated

Guide to the Frederick Reines papers MS.F.007

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**Photographs of professional life**

**Physical Characteristics and Technical Requirements**

44 photographs

- box 158, folder 2-4
  - General photographs of professional life circa 1955-1990
  - Scope and Content Summary
    - Includes portraits, group photographs, images of awards and award ceremonies, and some experiment images.

- box 130, folder 9
  - Photographs from trip to Russia 1974

- box 131, folder 2
  - Photographs of “DIFTEL” 1980-1981

- box 131, folder 3
  - Photographs of Distinguished Professor Award 1987

- box 131, folder 4
  - Photographs of early experiments, Los Alamos, Reines and Cowan 1940s-1950s

- box 131, folder 5
  - Photographs of experiments at East Rand Proprietary Mines, South Africa circa 1960-1969

- box 131, folder 6
  - Photographs of neutrino oscillation experiment undated

- box 131, folder 10
  - Photographs of UCI and teaching circa 1970-1979

- box 131, folder 11
  - Photographs of UCI bar magnet

**Slides and negatives**

- box 131, folder 14
  - Negatives
    - Physical Characteristics and Technical Requirements
    - Approximately 50 photographic negatives including personal and professional images of Reines as well as his colleagues, friends, and family.

**Slides**

- box 158, folder 1
  - Meeting in Japan 1963
    - Physical Characteristics and Technical Requirements
    - 5 2 X 2 inch color slides

- box 158, folder 1
  - Underground experiment 1981 November
    - Physical Characteristics and Technical Requirements
    - 16 2 X 2 inch color slides

- box 158, folder 1
  - Meeting in Koshiba, Japan 1987
    - Physical Characteristics and Technical Requirements
    - 13 2 X 2 inch color slides

- box 158, folder 1
  - Experiment images
    - Physical Characteristics and Technical Requirements
    - Approximately 30 2x2" color slides.

- box 159, box 160
  - Personal slides
    - Scope and Content Summary
    - Approximately 400 slides, including images of Reines and his family at home and while traveling.

- box 160
  - Lantern slide cover glass
    - Scope and Content Summary
    - Two lantern slide cover glass slides, presumably used for an experiment.

**Posters**

- box 143, folder 3
  - Benjamin Franklin Symposium in Celebration of the Discovery of the Neutrino, The Franklin Institute 1992
<table>
<thead>
<tr>
<th>Box/Folder</th>
<th>Description</th>
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<tr>
<td>143, folder 1</td>
<td><em>Frontiers of Science,</em> &quot;The Mysterious Particle,&quot; cartoon 1966</td>
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<tr>
<td>143, folder 1</td>
<td>&quot;London Chronicle,&quot; lampoon of Isaac Newton's discovery of fluxions undated</td>
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<tr>
<td>143, folder 3</td>
<td>The Neutrino: Poltergeist to Particle, Israel 1988</td>
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<td>143, folder 3</td>
<td>The Neutrino: from Poltergeist to Particle, Purdue University, Indiana 1990</td>
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<td>143, folder 3</td>
<td><em>Never Stop Asking &quot;Why?:</em> Frederick Reines, A Life in Physics, University of California, Irvine 2000</td>
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<td>143, folder 3</td>
<td>Neutrino ’88, Boston 1988</td>
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<td>XOS 2</td>
<td>Neutrino ’94, Israel 1994</td>
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<td>138, folder 8</td>
<td>Photograph of the diver in the Proton decay experiment 1983</td>
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<tr>
<td>143, folder 3</td>
<td><em>The Reines Symposium, Los Alamos National Laboratory</em> 1996</td>
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<td>143, folder 3</td>
<td>Texas Symposium on Relativistic Astrophysics, Germany 1994</td>
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<td>143, folder 3</td>
<td>UCI Reinesfest, University of California, Irvine 1988 May 5</td>
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<tr>
<td>143, folder 3</td>
<td>Underground neutrino detection, painting undated</td>
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<tr>
<td>147</td>
<td>Scrapbook by Reines' mother August 1945</td>
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<tr>
<td>148</td>
<td>New York University commencement scrapbook 1996</td>
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<tr>
<td>146</td>
<td>Scrapbook of travel to France, Switzerland, and visit to CERN 1985</td>
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<td>146</td>
<td>Scrapbook of conferences and travel in London, Amsterdam, Dubai, Singapore, Taipei and Tokyo 1982</td>
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<tr>
<td>141</td>
<td>Scrapbook of sabatical travel to Europe 1976-1977</td>
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<tr>
<td>142</td>
<td>Scrapbook of travel to Italy and France 1980-1981</td>
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<tr>
<td>144</td>
<td>Scrapbook of travel to New York, Finland, Russia, and Italy 1991</td>
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<tr>
<td>145</td>
<td>Scrapbook documenting visit to Washington, D.C. for President's National Medal of Science 1985</td>
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**Video recordings**

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<td>Access</td>
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<td>Access to archival originals is restricted; researchers must use viewing copy.</td>
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"Day One, A-Bomb" 5 March 1989

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<td>1 videocassette (VHS)</td>
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Archival original

DUMAND SPS deployment 1987

| Archival original |

DUMAND engineering components discussion 1986

| Archival original |

Richard Feynman at UCI 1987 April 16

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<td>1 videocassette</td>
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Archival original

*Horizon: Project Poltergeist*

| Duplicating master |

Use copy

JPL Computer Graphics Lab undated
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<td>174, 049A</td>
<td>Archival original</td>
<td>Los Alamos National Laboratory 50th anniversary Trinity Round Table remarks, April 1994</td>
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<td>172, V002</td>
<td>Archival original</td>
<td>PBS MacNeil/Lehrer News Hour segment on Nobel Prize, second segment, 11 October 1995</td>
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<td>175, 059A</td>
<td>Archival original</td>
<td>Modern Physics in America, &quot;Neutrinos from Atmosphere...&quot; lecture at Case Western Reserve University, 1987</td>
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<td>172, V001</td>
<td>Archival original</td>
<td>NBC Dateline, &quot;Music Enhances Spatial Reasoning&quot; 1994 September 1</td>
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<td>174, 053A</td>
<td>Archival original</td>
<td>New Explorers: Catching the Sun 1994 August 30</td>
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<td>174, 052A</td>
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<td>&quot;Nobel in the Park&quot; undated</td>
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<td>175, 060A</td>
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<td>&quot;Nobel Meeting of the Minds,&quot; Stockholm 1995</td>
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<td>174, 056A</td>
<td>Archival original</td>
<td>&quot;Nobel Minds: Challenges of the 21st Century&quot; undated</td>
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<td>174, 048A</td>
<td>Archival original</td>
<td>Nobel Prize ceremony and celebration footage</td>
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<tr>
<td>173, 037A-044A</td>
<td>Archival originals</td>
<td>Scope and Content Summary</td>
</tr>
<tr>
<td>173, 036A</td>
<td>Archival original</td>
<td>Nobel Prize, CNN 1995</td>
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<tr>
<td>171, 031M</td>
<td>Duplicating master</td>
<td>Project Poltergeist, interviews with Hank Sobel, Jonas Schultz, Steve Barwick</td>
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<td>171, 031U</td>
<td>Use copy</td>
<td>undated</td>
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<td>174, 050A</td>
<td>Archival original</td>
<td>ReinesFest 1988 May 5</td>
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<td>172, V009</td>
<td>Preservation master</td>
<td>Physical Characteristics and Technical Requirements</td>
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Guide to the Frederick Reines papers MS.F.007
Audio and visual material Series 13.1955-2000 and undated

Guide to the Frederick Reines papers MS.F.007

- **Preservation master**
  Physical Description: 1 small BetacamSP cassette.

- **ReinesFest daytime program, 2 of 3**
  Archival original

- **Preservation master**
  Physical Description: 1 large BetacamSP cassette.

- **ReinesFest daytime program, 3 of 3**
  Archival original

- **Preservation master**
  Physical Description: 1 large BetacamSP cassette.

- **ReinesFest evening program, 1 of 2**
  Archival original

- **ReinesFest evening program, 2 of 2 1988**
  Archival original

- **Preservation master**
  Physical Description: 1 large BetacamSP cassette.

- **Frederick Reines Hall dedication 1997**
  Archival originals

- **Frederick Reines Hall memorial 14 November 1998**
  Archival original

- **Frederick Reines on Neutrinos, Channel 4 undated**
  Archival original

- **Reines talk to SPS 1987 September 24**
  Physical Characteristics and Technical Requirements
  1 videocassette

- **Archival original**

- **Super-Kamiokande undated**
  Physical Characteristics and Technical Requirements
  1 videocassette

- **Archival original**

- **Stevens Institute of Technology commencement and honorary doctorate 1984**
  Archival original

- **Sylvia Reines 20 August 1992**
  Archival original
  Physical Description: 1 Hi8 8 mm videocassette.
Ted Will Memorial Lecture, CSU Dominguez Hills 1995

Scope and Content Note
Title of lecture: "The Neutrino: From Poltergeist to Particle."

Archival original

Preservation master

Physical Description: 1 large BetacamSP cassette.

UC Irvine commencement, news clips 1996

Archival original

UC Irvine, memorial lecture (parts 1 and 2) 13 March 1999

Archival originals

Personal film recordings 1949-1950 and undated

Scope and Content Summary

Archival originals film reels

Physical Characteristics and Technical Requirements
Unknown sound and color characteristics; 8 mm; 2 film reels.
Access
Access to archival originals is restricted; researchers must use viewing copy.

Oversize clippings and newspapers 1968-1987

Mementos and other artifacts Series 14. 1935-1995 and undated

Series Scope and Content Summary
This series consists of a variety of memorabilia and mementos of Reines' personal and professional life. Included in this series are experiment mementos such as geological specimens and science supplies, a sizeable collection of pins from Neutrino conferences and travel to Russia, as well as childhood memorabilia from Reines' membership in the Boy Scouts of America.

Clothing

Academic regalia
Sailor cap worn by server at Nobel dinner 1995
Sweater, Stevens Institute of Technology 1939

Mementos and artifacts

Boy Scouts of America memorabilia

Scope and Content Summary
Includes Boy Scouts of America patches, pins, membership cards, and Eagle Scout medal earned by Reines.

DC-AC chopper, type 258, coil 6 volts (boxed)

Embossed napkins from President Nixon's Western White, San Clemente, CA where a meeting from the First Solar Neutrino Conference at UC Irvine was held 1972 February

End of a photomultiplier tube from neutrino experiment

Physical Description: One electronic part consisting of red capacitors and burgandy resistors with one red and one black wire, all attached to a brown plastic circular part approximately 6 cm. in diameter.
Mementos and other artifacts Series 14.1935-1995 and undated

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<tr>
<td>153</td>
<td>1</td>
<td>Lincoln &quot;super-visibility&quot; lens, shade no. 10</td>
</tr>
<tr>
<td>153</td>
<td>1</td>
<td>Los Alamos National Laboratory commemorative coins, 1943-1993 1993</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physical Description: 4 plastic encased copper coins; 38 mm. diameter.</td>
</tr>
<tr>
<td>153</td>
<td></td>
<td>Neutrino conference pins</td>
</tr>
<tr>
<td>153</td>
<td></td>
<td>Paper polyhedron models, inscribed by Reines</td>
</tr>
<tr>
<td>153</td>
<td>2</td>
<td>Small welded object, possibly representing a particle</td>
</tr>
<tr>
<td>153</td>
<td>1</td>
<td>Solar Neutrino Conference, UC Irvine, neutrino matchbox gag gift 1972</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Russian and Soviet pin collection</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Arrangement</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Buttons and pins are not arranged. Each item is sleeved individually (duplicates are housed together in the same sleeve).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope and Content Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Approximately 90 unique buttons and pins collected by Reines, primarily representing the Soviet Union and Russia.</td>
</tr>
<tr>
<td>153</td>
<td></td>
<td>Russian and Soviet ship pins with note</td>
</tr>
<tr>
<td>153</td>
<td>1</td>
<td>Union Hill High School class ring 1935</td>
</tr>
<tr>
<td>128</td>
<td>10</td>
<td>Unsorted memorabilia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope and Content Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Includes drafting triangle, French curve ruler, pocket-sized atomic and nuclear properties formula card, pocket-sized atomic testing map, and name tag.</td>
</tr>
<tr>
<td>153</td>
<td>2</td>
<td>Wallet, leather undated</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Scope and Content Summary</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Item includes numerous typed labels affixed, indicating what appear to be dates of significance to Reines.</td>
</tr>
<tr>
<td>153</td>
<td>1</td>
<td>Geological specimens</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gold ore from East Rand Propriety Mine, South Africa, neutrinos first discovered in 1965 1965</td>
</tr>
<tr>
<td>152</td>
<td></td>
<td>Large salt crystals from Morton Mine, Painsville, Ohio from IBM experiment to set the best limits on the lifetime of the proton 1980-1990</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physical Description: 1 salt crystal: white; 11 x 8 x 7 cm. 1 salt crystal: cream; 10 x 9 x 5 cm.</td>
</tr>
</tbody>
</table>


Physical Description: 2 Linear Feet (2 records cartons)
Access
This addition to the collection is not yet processed. It may contain restricted materials. Please contact the Department of Special Collections and Archives in advance to request access.

Series Scope and Content Summary
This accretion contains personal and family correspondence; personal "scrapbook" items such as cards, photographs, and notebooks; small books that were picked up on his travels or gifted by friends; some digital media and audiovisual material; a card catalog; checkbook stubs; a canvas bag; and a small metal tin.
Scope and Content Note
This box contains a small book "The Dot and the Line" (fragile) with a note: "Fred thought this was hilarious"; a small metal can with a note: "Fred must have brought this film can back from the S. Pacific tests"; 3 reels; bundles of personal correspondence, cards, photographs, and other personal items; bundles of scrapbook and letters saved by Sylvia Reines; a Texas/Pascos '92 canvas bag; a paper Reines wrote in high school; a poetry book called Many Long Years Ago with a note: "a favorite of Fred's"; a book McGillicuddy McGotham by Leonard Wibberley, sent to him by Marshall Crouch with a letter.

Scope and Content Note
This box contains bundles of personal correspondence and "scrapbook" items collected by Sylvia Reines; correspondence, clippings, and personal items; family letters, Los Alamos 1940s-1950s; 4 CDs: "The Nobel Prize that almost missed Fred Reines." Harris Mayer. October 2007, recorded by the Los Alamos Historical Society Disk 1 & 2, "For Robert and Lisa: Something about your parents." Harris Mayer. October 2007, and a Netgear CD; a card catalog of books in Frederick and Sylvia Reines' library before having children; The Teaching of Buddha book; Hong Kong Park Hotel book with inscription: Hong Kong, April 1963, "Around the world in 13 days", for Lisa from Daddy"; book of rhymes and songs a friend bought Lisa that Frederick loved (fragile); English-Swahili phrase book and Miners' Companion in English, Afrikaans and Fanakalo - he obtained them in S. Africa when doing experiments there; bundles of correspondence and personal items, including photographs; and 6 small checkbook stubs.

Scope and Content Note
This box contains a complimentary bag from a conference (Dark Matter of the Universe Conference, Maryland, 1994); bundle of miscellaneous letters including "singing postcards" (45 rpm record on a postcard), 1956-1970; a bundle of family letters, 1952-1982; bundle of letters and a certificate from when Frederick Reines was in the South Pacific, 1945-1955; correspondence from the Atoms for Peace conference in Geneva 1958; financial and household records kept by Sylvia Reines; boy scout memorabilia of Frederick Reines; items from Sylvia Reines' job; personal negatives and photographs; and a bag from a 1994 conference.

Access
This addition to the collection is not yet processed. It may contain restricted materials. Please contact the Department of Special Collections and Archives in advance to request access.

Series Scope and Content Summary
This accretion contains personal/family correspondence and personal items such as cards, poems, love letters, and ephemera; letters from when Frederick Reines was in the South Pacific; correspondence from the Atoms for Peace conference in Geneva 1958; financial and household records kept by Sylvia Reines; boy scout memorabilia of Frederick Reines; items from Sylvia Reines' job; personal negatives and photographs; and a bag from a 1994 conference.

Guide to the Frederick Reines papers MS.F.007
Box 2 1929-1998

Scope and Content Note
This box contains love letters between Frederick and Sylvia Reines in the box Sylvia Reines kept them in.