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## Guide to the Albert V. Baez Papers SC1052

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Department of Special Collections and University Archives

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### **Note**

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**Language of Material:** Undetermined

**Contributing Institution:** Department of Special Collections and University Archives

**Title:** Albert V. Baez papers

**creator:** Baez, Albert V.

**Identifier/Call Number:** SC1052

**Physical Description:** 13.75 Linear Feet(10 boxes)

**Date (inclusive):** 1949-1995

**Abstract:** The materials consist of research files, correspondence, teaching materials, biographical material, publications, photographs, and some experimental equipment.

**Information about Access**

The materials are open for research.

Audio-visual materials are not available in original format, and must be reformatted to a digital use copy.

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**Cite As**

[identification of item], Albert V. Baez Papers (SC1052). Dept. of Special Collections, Stanford University Libraries, Stanford, Calif.

**Scope and Contents**

The materials consist of research files, correspondence, teaching materials, biographical material, publications, photographs, and some experimental equipment.

**Biographical / Historical**

Albert Vinicio Baez, Ph.D. (1912-2007) was a prominent Mexican-American physicist, and the father of singers Joan Baez and Mimi Fariña.

Dr. Baez earned his bachelor's degree in mathematics from Drew University in 1933 and his master's degree in physics from Syracuse University in 1935. In 1936, he married Joan Chandos Bridge, the daughter of an Episcopalian minister. The couple became Quakers and had three daughters, Pauline, Joan and Mimi. Together they moved to California, where he pursued a doctorate in physics.

In 1948, along with Stanford University professor Paul Kirkpatrick (1894-1992), Baez developed the X-ray reflection microscope for examination of living cells. This microscope is still used today in medicine. Baez received his PhD in physics from Stanford in 1950. After graduating, he developed zone plates—concentric circles of alternating opaque and transparent materials to use diffraction instead of refraction to focus X-rays. Unfortunately, much of his work had to await the development of synchrotron X-rays sources several decades later.

As the Cold War arose in the 1950s, Dr. Baez's talents were in high demand for the developing arms race. However, influenced by his family's pacifist beliefs, he refused lucrative war industry jobs, preferring instead to devote his career to education and humanitarianism. From 1950 to 1956, he held a professorship at the University of Redlands, where he continued his X-ray research. Dr. Baez took a yearlong leave to work with UNESCO in 1951, stationing his family in Baghdad to establish the physics department and laboratory at Baghdad University. In 1959, Dr. Baez accepted a faculty position at MIT, and moved his family to the Boston area. In 1960, working with the Smithsonian Astrophysical Observatory in Cambridge, MA, he developed optics for an X-ray telescope. Later that year he moved to the faculty of Harvey Mudd College, and moved his family to Claremont, California. From 1961 to 1967, he directed science teaching for UNESCO in Paris.

Dr. Baez was the author of the textbook *The New College Physics: A Spiral Approach* (1967). He was also the co-author of the textbook *The Environment and Science and Technology Education* (1987) and the memoir *A Year in Baghdad* (1988). Dr. Baez made almost 100 films about physics for the Encyclopædia Britannica Educational Corp from 1967 to 1974. He also chaired the Commission on Education of the International Union for Conservation of Nature and Natural Resources from 1979 to 1983.

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After his retirement, Dr. Baez occasionally delivered physics lectures and was president of Vivamos Mejor/USA, an organization founded in 1988 to help impoverished villages in Mexico. Its projects include preschool education, environmental projects, and community and educational activities. In 1991, the International Society for Optical Engineering awarded him and Kirkpatrick the Dennis Gabor Award for pioneering contributions to the development of X-ray imaging microscopes and X-ray imaging telescopes. In 1995, the Hispanic Engineer National Achievement Awards Corporation (HENAAC) established the Albert V. Baez Award for Technical Excellence and Service to Humanity. Dr. Baez himself was inducted into the HENAAC Hall of Fame in 1998.

He died of natural causes March 20, 2007 at age 94.

### **Subjects and Indexing Terms**

Stanford University -- Faculty.

X-ray microscopy

Physics -- Experiments.

Physics.

X-ray holography

Baez, Albert V.

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### **Papers**

box 1, folder 1	<b>X-Ray Telescope</b>
box 1, folder 2	<b>Professor Paul Kirkpatrick</b>
box 1, folder 3	<b>X-Ray Optics Paper</b>
box 1, folder 4	<b>X-Ray Pictures</b>
box 1, folder 5	<b>Soft X-Ray Microscopes</b>
box 1, folder 6	<b>X-Ray holography</b>
box 1, folder 7	<b>Richard B. Hoover Papers</b>
box 1, folder 8	<b>Renaissance of X-Ray Optics</b>
box 1, folder 9	<b>X-Ray Pictures using Zone Plates at Lawrence Livermore National Lab</b>
box 1, folder 10	<b>Dr. Baez's Ph.D. Thesis (Copy) - Stanford University 1949 Aug</b>
box 1, folder 11	<b>Introduction to Optics using Microwaves ( Draft by Baez, Reprint of a Review Article on Microwave Spectroscopy)</b>
box 1, folder 12	<b>Optics Education (Reprints, booklets, Journal Issues, on teaching of Optics)</b>
box 1, folder 13	<b>Technology in Education (Printed Articles)</b>
box 1, folder 14	<b>Technology in Education (Booklets)</b>
box 1, folder 15	<b>Stanford University Physics 23 Course (Baez's Syllabus and Lectures)</b>
box 1, folder 16	<b>Stanford University Physics 29 Course (Baez's Syllabus and Lectures)</b>
box 1, folder 17	<b>Stanford University Physics 21 Course (Baez's Syllabus and Lectures)</b>
box 1, folder 18	<b>Harvard Summer School (Photographs of Students, 5 sections) 1968</b>
box 1, folder 19	<b>Preparation of Harvard Summer School Lectures (Description of Auto Lectures)</b>
box 1, folder 20	<b>Harvard Summer School, Micro-Notes I</b>
box 1, folder 21	<b>Harvard Summer School, Micro-Notes II</b>
box 1, folder 22	<b>Harvard Summer School, Overhead Transparencies</b>
box 1, folder 23	<b>Auto Lecture Transcripts I</b>
box 1, folder 24	<b>Auto Lecture Transcripts II</b>
box 1, folder 25	<b>Auto Lecture Transcripts III</b>
box 1, folder 26	<b>Harvard Summer School Pre Tests</b>
box 1, folder 27	<b>Auto Lecture Illustrations</b>
box 1, folder 28	<b>Harvard Summer School, Students</b>
box 1, folder 29	<b>Harvard Summer School, Improvement Printed 1971</b>
box 1, folder 30	<b>Correspondence with Harvard Professor Purcell</b>
box 1, folder 31	<b>Science Teaching at UNESCO, Research and Outline</b>
box 1, folder 32	<b>Copies of popular articles of the B.F. Skinner vs. Noam Chomsky debate(s)</b>
box 3, folder 1	<b>Central Washington Speech, X-Ray Optics plus Transparencies</b>
box 3, folder 2	<b>Talk at Sonoma State University, Physics Department 1986</b>
box 3, folder 3	<b>Holography Publication with G. Castro Reprints 1999</b>

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box 3, folder 4	<b>Pre-prints of 3 papers by A.V. Baez</b>
box 3, folder 5	<b>A.V. Baez, Biographical Sketches and Press Clippings</b>
box 3, folder 6	<b>A.V. Baez, Diary and Science Notes Summer 1956</b>
box 3, folder 7	<b>Miscellaneous Clippings from newspapers and magazines</b>
box 3, folder 8	<b>Correspondence with Professor Manfred von Ardenne of Dresden 1956-57</b>
box 3, folder 9	<b>X-Rays, Various reprints, 1966-68</b>
box 3, folder 10	<b>X-Ray Research, Various reprints, some manufacturers literature</b>
box 3, folder 11	<b>X-Ray Pictures II, Various unlabeled X-ray photos(probably taken by Baez at the University of Redlands) 1956</b>
box 3, folder 12	<b>Bibliography, various published bibliographies on X-Ray Radiography</b>
box 3, folder 13	<b>X-Ray Astronomy, Various reprints and some correspondence</b>
box 3, folder 14	<b>X-Ray Sources, reprints of solar and interstellar x-rays</b>
box 3, folder 15	<b>X-Ray Spectrographic Chart, X-Ray lines of the elements</b>
box 3, folder 16	<b>X-Ray Detectors, reprint on scintillators, report on outer space detection</b>
box 3, folder 17	<b>X-Ray Mic. Lit., Correspondence and reprints on X-Ray Microscopy</b>
box 3, folder 18	<b>X-Ray Microscopy New Tool, Notes, Lectures, Correspondence on X-Ray Microscopy 1953-64</b>
box 3, folder 19	<b>The X-Ray Microscope AVB, A review manuscript on the X-ray Microscope by A.V. Baez (probably unpublished) 1955</b>
box 3, folder 20	<b>X-Ray Mic. Reprints, various reprints about the x-Ray Microscopy</b>
box 3, folder 21	<b>X-Ray Microscopy a Patent, presented by A.V. Baez at the Cancer Conference 1957</b>
box 3, folder 22	<b>Patent Disclosure, Patent request for an X-Ray Telescope, Report on the Erosion of plastic at Cornell 1949</b>
box 3, folder 23	<b>ONR Report, by A.V.Baez, X-Ray Focusing by Diffraction, Annual Summary Report 1955-56</b>
box 3, folder 24	<b>Orbiting X-Ray Telescopes, Smithsonian Notes and Papers</b>
box 3, folder 25	<b>Baez X-Ray from Paul Kirpatrick, Correspondence and Notes 1990</b>
box 3, folder 26	<b>Holography Interferometry, Reprints and Pre-print</b>
box 3, folder 27	<b>Holography Advanced, Reprints and one Report</b>
box 3, folder 28	<b>Holography Advanced II, Reprints and one Pre-print</b>
box 4, folder 1	<b>S.P.I.E., Correspondence and Literature</b>
box 4, folder 2	<b>Schawlow, Reprints</b>
box 4, folder 3	<b>Optics Holography-Soroko/USSR, Correspondence</b>
box 4, folder 4	<b>Optics, Stroke, Reprints and Correspondence</b>
box 4, folder 5	<b>Optics Valasek, Notes</b>
box 4, folder 6	<b>Optics/Wolf, Correspondence and Reprints</b>
box 4, folder 7	<b>Optics Holography, Neural, Reprints</b>
box 4, folder 8	<b>Optics Woodruff, Correspondence</b>
box 4, folder 9	<b>Holography Acoustic, Reprints and Journal Issue</b>
box 4, folder 10	<b>Holography, Misc. Correspondence and Reprint</b>
box 4, folder 11	<b>Optics- Kastler, Correspondence and Reprints</b>
box 4, folder 12	<b>Optics Kock, Correspondence and Reprints</b>
box 4, folder 13	<b>Optics -Leith, Reprints and Pre-prints</b>
box 4, folder 14	<b>Optics-Microwaves, Reprints and Lab Experiment Instructions</b>
box 4, folder 15	<b>Optics -Mikulka Electrical Analog, Reprints</b>
box 4, folder 16	<b>Optics- MW Holography, Reprints</b>
box 4, folder 17	<b>Optics- Index Reprint, An index of the reprints in the area of Optics</b>
box 4, folder 18	<b>A- Quantum</b>
box 4, folder 19	<b>B- Space</b>
box 4, folder 20	<b>C-Image</b>
box 4, folder 21	<b>D-Microscope</b>
box 4, folder 22	<b>E-Film</b>
box 4, folder 23	<b>F-Spectroscopy</b>
box 4, folder 24	<b>G-Interferometry</b>
box 4, folder 25	<b>H-History</b>
box 4, folder 26	<b>I-Laser</b>
box 4, folder 27	<b>J-Resolution</b>
box 4, folder 28	<b>K-Binocular (3-D)</b>

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box 4, folder 29	<b>L-Physics of</b>
box 4, folder 30	<b>M- Lenses</b>
box 4, folder 31	<b>N-Ete</b>
box 4, folder 32	<b>O-X-Rays</b>
box 4, folder 33	<b>UV</b>
box 4, folder 34	<b>P-Reflection</b>
box 4, folder 35	<b>Q-Institutions</b>
box 4, folder 36	<b>R-Glass</b>
box 4, folder 37	<b>S-fourier and Correlation</b>
box 4, folder 38	<b>T- Coherence</b>
box 4, folder 39	<b>U-bibliography</b>
box 4, folder 40	<b>V-Information Theory</b>
box 4, folder 41	<b>W-Color</b>
box 4, folder 42	<b>X-detectors</b>
box 4, folder 43	<b>Y-Polarized Light</b>
box 4, folder 44	<b>Z-zone Plates</b>
box 5, folder 1	<b>Zone plate</b>
box 5, folder 2	<b>Descriptive Geometry with 3-D Figures by Imre Pal</b>
box 5, folder 3	<b>Overheads for Holography Seminar</b>
box 5	<b>"Baez Video for viewing with Diffraction Grating"</b>
	<b>Physical Description: 1 videotape(s) (vhs)</b>
box 5, folder 4	<b>Redlands hologram and reconstruction, 35mm slide (of gratings?)</b>
box 5	<b>lenses, loupe and magnifying glasses</b>
box 5	<b>Kiss-II, Mini KISS, Mini Train: Clear plastic sheets carefully wrapped in 3 tubes</b>
box 5, folder 5	<b>Fresnel lenses and holograms</b>
box 5	<b>Filters 1988</b>
box 5, folder 6	<b>Micro Mini Multiple Holograms</b>
box 5, folder 7	<b>Polaroid</b>
box 5, folder 8	<b>"Diffraction Gradings" (sic)</b>
box 5, folder 9	<b>Apertures (Circular, Tip Split, Single Slit)</b>
box 5, folder 10	<b>Multiplex Co.</b>
box 5, folder 11	<b>Glass hologram</b>
box 5, folder 12	<b>YIP hologram</b>
box 6	<b>Mounted optical gratings</b>
box 6	<b>"Eastman Spectroscopic Plates"--zone plates and slides on x-ray telescope.</b>
	<b>General note</b>
	these are lantern slides only, the only real gold zone plate is the one in Box 5 in its own mailing package
box 6	<b>X-ray Conf 33055</b>
box 6	<b>X-ray zone plate</b>
box 6	<b>Optics - Gabor</b>
box 6	<b>Gabor (correspondence)</b>
box 6	<b>Rogers, Gordon Film, Information</b>
box 6	<b>Physics/Manual</b>
box 6	<b>Mounted gratings (contains many smaller envelopes)</b>
box 6	<b>e-mail correspondence with Sean Johnston (Scotland) on early holography expts.</b>
box 6	<b>"X-ray hand"</b>
	<b>Physical Description: 1 film reel(s) (16mm)</b>
box 6	<b>Lantern slide zone plate</b>
box 6	<b>Correspondence with Dr. George Castro and joint papers; referee correspondence</b>
box 6	<b>A Guide to Holograph (draft)</b>
box 6	<b>Fisher; Konhious (?)--two wrapped lantern slides 1970-1971</b>
box 6	<b>loose papers</b>
box 7, folder 1	<b>X-ray optical Images (Copies #11, #38 &amp; #41)</b>

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box 7, folder 2	<b>A Study of Diffraction of Microscopy by Donald D. Robinson (Vols 1 &amp; 2)</b>
box 7, folder 3	<b>EBF Misc Lasers Holography and Plans</b>
box 7, folder 4	<b>Holography: ideas for a course and a book plus experiments</b>
box 7, folder 5	<b>Holography Introductory</b>
box 7, folder 6	<b>Holography Jeong</b>
box 7, folder 7	<b>Holography Introduction</b>
box 7, folder 8	<b>Reference Materials</b>
box 7, folder 9	<b>Holography Proposal: Baez</b>
box 7, folder 10	<b>Holography: Firms, Resources, People</b>
box 7, folder 11	<b>Holography: Correspondence - A. Baez</b>
box 7, folder 12	<b>Films and Other Audio-Visual Aids</b>
box 7, folder 13	<b>Baez: Manual Holography</b>
box 7, folder 14	<b>Holography: Information Sheet Requests</b>
box 7, folder 15	<b>Holography Information Sheets Originals</b>
box 7, folder 16	<b>Zone Plates Holography X Rays</b>
box 7, folder 17	<b>Zone Plates</b>
box 7, folder 18	<b>Zone Plate Misc.</b>
box 7, folder 19	<b>Zone Plate Gust</b>
box 7, folder 20	<b>Zone Plate Paul</b>
box 7, folder 21	<b>Bottema/Zone Plates</b>
box 7, folder 22	<b>Optics/EI-Sum</b>
box 7, folder 23	<b>Greguss</b>
box 7, folder 24	<b>Optics/Jannossy</b>
box 7, folder 25	<b>Zone Plate - Reprint List</b>
box 7, folder 26	<b>Optics - Mollenstedt</b>
box 7, folder 27	<b>Holography - Bibliography</b>
box 7, folder 28	<b>Rogers, G.L</b>
box 7, folder 29	<b>Gabor, Notes</b>
box 7, folder 30	<b>Annual Meeting of the Advanced Light Source Users Association 1993 Oct 21-22</b>
box 7, folder 31	<b>Proceedings: Advanced Optical Manufacturing and Testing (San Diego) 1990</b>
box 8, folder 1	<b>Some loose papers, reports &amp; correspondence</b>
box 8, folder 2	<b>Pioneering Photos 1947</b>
box 8, folder 3	<b>Large envelope: Lit. search S-Ray zone plate holography</b>
box 8, folder 4	<b>X-Ray Optics - Magnus</b>
box 8, folder 5	<b>X-Ray Conference (on X-Ray Astronomy at Smithsonian Astrophysical Observatory, Cambridge, Mass.) 1960 Sep 20</b>
box 8, folder 6	<b>Theses, Marc Montel 1958</b>
box 8, folder 7	<b>SPIE (Preconference) 1991</b>
box 8, folder 8	<b>SPIE July 21-26, 1991</b>
box 8, folder 9	<b>X-Ray misc SPIE 1995 Jul 12</b>
box 8, folder 10	<b>X-ray Research (Including April 1984 Physics Today issue with Underwood and Attwood article)</b>
box 8, folder 11	<b>X-rays (includes Early Reflections) 34892</b>
box 8, folder 12	<b>Holography Lecture O.U.</b>
box 8, folder 13	<b>Holography Book and Auto lectures</b>
box 8, folder 14	<b>Buckbee Mears Co.</b>
box 8, folder 15	<b>Henke + X-ray optics</b>
box 8, folder 16	<b>Holography Lecture</b>
box 8, folder 17	<b>Stanford Linear Accelerator Center</b>
box 8, folder 18	<b>Research Winick Synchrotron - Wigglers</b>
box 8, folder 19	<b>Davis, Robt Telescope 1966</b>
box 8, folder 20	<b>G. L. Rogers 1956</b>
box 8, folder 21	<b>Holography Speech</b>
box 8, folder 22	<b>X-Rays</b>
box 8, folder 23	<b>Janos Kirz/A.V. Baez, X-Ray</b>
box 8, folder 24	<b>SPIE Paper 1546-38 (Ross borrowed) 1991</b>
box 8, folder 25	<b>Check list of facilities and Equipt.</b>
box 8, folder 26	<b>Holography Auto Lect. + Lecture</b>

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box 8, folder 27	<b>AAAS Holography</b>
box 8, folder 28	<b>R-Hoover - X-rays 1990-1991</b>
box 8, folder 29	<b>Tyndall Lecture - Final Outline</b>
box 8, folder 30	<b>X-Rays</b>
box 9, folder 1	<b>X-Ray Astronomy Reprints</b>
box 9, folder 2	<b>Ultra-Violet Reprints</b>
box 9, folder 3	<b>Astrophysical Project Description</b>
box 9, folder 4	<b>Note for Holographic Activities at Lawrence Hall of Science</b>
box 9, folder 5	<b>Holographic Manual from Metrologic Instruments</b>
box 9, folder 6	<b>Color Diffraction - Notes and Lectures</b>
box 9, folder 7	<b>Diffraction Microscopy - Notes</b>
box 9, folder 8	<b>Diffraction Microscopy - Reprints</b>
box 9, folder 9	<b>University of Redlands Research - Notes and Letters</b>
box 9, folder 10	<b>American Cancer Society - Report of Research Accomplished</b>
box 9, folder 11	<b>Copy of Letter to Nahum Joel, miscellaneous reprints on x-ray imaging</b>
box 9, folder 12	<b>Ted (Edward) Fisher - student of Baez at the University of Redlands, Letters and Notebook</b>
box 9, folder 13	<b>Thesis (Honors Project) of Edward Fisher</b>
box 9, folder 14	<b>Research Reports of Baez's students (3) at the University of Redlands</b>
box 9, folder 15	<b>Overhead foils for the talk on Holography, Technical requirements for Holography Demonstrations, Manufacturing Literature for Holography Photography</b>
box 9, folder 16	<b>Special Issue Magazine with 3-D Photographs (with special eyeglasses)</b>
box 9, folder 17	<b>Drafts and scripts for a slide and tape presentation on Holography</b>
box 9, folder 18	<b>Reprints on Holography</b>
box 9, folder 19	<b>Optics Experiments for Physics students at Harvard 1970</b>
	<b>Additional Papers</b> Accession ARCH-2016-132
Box 1, Folder 1	<b>"I" 1974-06</b>