Featured Oral History: Ximena Cid, PhD

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ABOUT THE NEWSLETTER

This newsletter is a biannual publication of the Center for History of Physics, American Institute of Physics, 1 Physics Ellipse, College Park, MD 20740; phone: +1.301.209.3165; email: chp@aip.org or nbl@aip.org, Editor: Joanna Behrman. The newsletter reports activities of the Center for History of Physics, Niels Bohr Library & Archives, and other information on work in the history of the physical sciences.

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Optica (Formerly OSA)
The Society of Rheology
BONNES CHOSES à VENIR!

EXCITING RARE BOOK DEVELOPMENTS AT THE NIELS BOHR LIBRARY & ARCHIVES

By Allison Rein, Associate Director, Library Collections & Services, Niels Bohr Library & Archives

The AIP Niels Bohr Library & Archives (NBL&A) and the Center for History of Physics (CHP) rely on support from donors and funding institutions to continue established activities and to expand programs into new areas. The Avenir Foundation is a generous supporter of the NBL&A and CHP, including establishing endowments for the director positions of both programs, funding oral history interviews, helping to expand NBL&A digital collections activities, and supporting the acquisition of rare books and other materials.

Avenir has also provided essential support for the preservation and research facilities at the NBL&A, beginning with the construction of a new rare books and archives vault, continuing with remediation of the environmental conditions in the existing archives and book stacks, and eventually a future renovation of the NBL&A reading room. This series of gifts honors the legacy of Homer Dodge, a physicist and educator who was a founding member and first president of the American Association of Physics Teachers. The Avenir Foundation, founded by descendants of Homer Dodge, supports education, arts, and cultural activities.

We’re so excited to be able to partner with the Avenir Foundation, and their support has enabled us to grow our collection in ways that were previously unimaginable. You may have heard of Avenir’s support for the Wenner acquisition, but they have also enabled the expansion of the collection in further directions. With the support of the Avenir Foundation, the NBL&A was able to purchase the following books in the past year:

Apianus, Petrus. Cosmographiae introductio cum quibusdam geometriæ ac astronomiae principiis ad eam rem necessariis. 1541

Bacon, Roger. Perspectiva. In qua, quae ab aliis fuse traduntur, succincte, nervose et ita pertractatur, ut omnium intellectui facile pateant. Nunc primum in lucem edita opera et studio Johannis Combachi. 1614


Petrus Apianus was a German natural philosopher in the early 16th century and a favorite of the Holy Roman Emperor Charles V. This is an abridgement of Apianus’s more famous Cosmographicus Liber, a very influential early work on cosmography, or the mapping of the earth and its place in the universe.

Written in the 13th century, Perspectiva became the foundation for the study of light and vision. Bacon called this study “perspectiva,” which was later known as optics in Europe. He based much of his knowledge on the study of existing Greek and Arabic works on optics. This particular edition was updated by Johannes Combach, a professor of philosophy and theology in Germany.

Laura Bassi was the first woman science professor in Europe. She introduced Newtonian physics to Italy and researched a variety of topics: electricity, capillary action, Boyle’s law, lenses, and others. Her published research focused on problems of classical mechanics and hydrodynamics. The two papers in this volume are some of the only published papers of this extraordinary scientific mind.
Cotes, Roger. *Hydrostatical and Pneumatical Lectures*. 1747

Roger Cotes, colleague of a then-unknown upstart named Isaac Newton, jointly created these lectures with William Whiston. The lectures were unusual because Cotes and Whiston used practical demonstrations and had students conduct experiments outside of the lectures. In addition to the lectures, this work also includes the first English translation of Newton’s law of cooling and Edmond Halley’s “Account of the Rising and Falling of the Mercury in the Barometer, upon Change of Weather.” Cotes is most known for editing the second edition of Newton’s *Principia* (1713).

Galilei, Galileo. *Nov-antiqua sanctissimorum patrum probatorum theologorum doctrina, de Sacæ Scriptuæ testimoniis, in conclusionibus mere naturalibus, quæ sensatæ experientiā, & necessariis demonstrationibus evinci possunt, temere non usurpandis: In gratiam serenissimæ Christinae Lotharingæ, magnæ-ducis Hetruriæ, privatim ante complures annos, italico idiomate concripta à Galilæo Galilæo ... Nunc vero juris publici facta, cum latina versione italico textui simul adjuncta*. 1636

The Nov-Antiqua was originally written in 1615 and circulated in manuscript form as a way to convince people of the compatibility between Copernicanism (i.e., a heliocentric universe) and scripture. Also known as the “Letter to Christina,” this document is a focal point in the story of Galileo’s struggles with the Church because of Galileo’s presumption in interpreting scripture. In this letter, Galileo argues that observation, and not Church doctrine, should be the ultimate authority for knowledge of the natural world, writing, “I think that in discussions of physical problems we ought to begin not from the authority of scriptural passages but from sense-experiences and necessary demonstrations.”


Pierre Gassendi was a French Jesuit priest and an astronomer. His *Institutio Astronomica* has been called the first modern astronomy textbook. This sammelband also includes two significant works of the period. The first is Galileo’s *Sidereus Nuncius* or *The Starry Messenger*, the first published scientific work based on telescopic observations. Galileo records his observations on the moon, the stars, and his discovery of Jupiter’s moons. The second work included is Kepler’s *Dioptrice*, an explanation of how convex and concave lenses can be combined to produce a telescope like the one Galileo used to make his observations.

Kircher, Athanasius. *Phonurgia Nova sive Conjugium mechanico-physicum artis & naturae paranympha phonosophia concinnatum. Quâ universa sonorum natura, proprietas, vires effectuum[que] prodigiorum causa, novâ & multipliici experimentorum exhibitione enucleantur: instrumentorum acusticorum, machinarum[que] ad naturæ prototypon adaptandarum, tum ad sonos ad remotissima spatio propagandos, tum in abditis domorum recessibus per

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Milankovic, Milutin. *Mathematische Klimalehre und astronomische Theorie der Klimaschwankungen*. Bound with three other works on climatology by other authors in *Handbuch der Klimatologie*. 1930

Milutin Milankovic, a Serbian astronomer and geophysicist, helped found planetary climatology. In this work, he explains his theory of the now-famous and eponymous Milankovitch cycles, which are cyclical changes in a planet’s climate caused by the variations in its orbit that result in variations in solar radiation reaching the earth. Milankovic’s theory helps explain the ice ages as well as future climate change, although, after his death in 1958, much of his work was disputed. It wasn’t until the 1970s that scientists were able to show evidence supporting the existence of Milankovitch cycles.

Ptolemy, Claudius. *Quadriparti*. Ptoloe Que in hoc volumine continentur hec sunt: Liber quadripartiti Ptolomei; Centiloquium eiusdem [cum commentu Haly]; Centiloquium Hermetis... 1519

This is the second edition of Hieronumus Salius’s edition of Ptolemy’s *Quadripartitium*, which was first printed in Venice in 1493. The *Quadripartitium*, meaning “four books” in Latin, is a treatise on astrology written in the second century CE after he wrote the *Almagest*. The *Quadripartitium* includes a discussion of the technical concepts of astrology, as well as astrological geography and weather prediction, and even astrological influences on people. (Probably more like the astrology we’re familiar with today—that pesky Mercury is always in retrograde!)

Wilkins, John. *A discovery of a new world, or, A discourse tending to prove, that ‘tis probable there may be another habitable world in the moon: with a discourse concerning the probability of a passage thither: unto which is added, A discourse concerning a new planet, tending to prove, that ‘tis probable our earth is one of the planets: in two parts*. 1684

John Wilkins was a founder of the Royal Society and a patron of science and scholarship. He was a great supporter of the “new” science of Copernicus, Kepler, and Galileo, and used *A Discovery* to further popularize those ideas. In particular, he theorizes that the moon might support life, much like Earth. He discusses in detail the problems of traveling to the moon by “flying chariot” and imagines human colonies on the moon—wild ideas in the 17th century!
Last November I traveled to CERN, in autumnal Geneva, in order to conclude my four-year-long doctoral research on the period of planning the Large Hadron Collider (LHC), one of the most spectacular scientific infrastructures ever made. For the purposes of this study, I had already delved into an extensive series of digitized archives, which cover the period from 1984, when the idea of the collider was first discussed officially, to 2000, when CERN made the firm decision to build it. (The construction of the LHC finally ended in 2008.) The archives include technical surveys, workshop proceedings, and minutes of the various councils and committees, which provide valuable insights into the shifts in strategies, the structure of the debates, the tensions between the various actors, and the rhetoric revolving around the LHC. It’s worth mentioning that, since these archives contain material considered sensitive by the organization, many of them are not readily available to the public. Thankfully, CERN was exceptionally generous, and Charlotte Lindberg Warakaulle, the CERN director for international relations, granted me access to all of the archives I requested permission for. Thus it was possible to probe into the host of scientific, technical, social, economic, and political issues of how the LHC came to be while witnessing contingency at work at almost every step of its creation.

However, some additional and particularly significant archival material was needed in order to have a deeper understanding of the planning of the LHC. Those were none other than the personal archives of the three CERN directors general, who managed to transform the LHC from an abstract idea to a reality within a historical context of momentous global changes, such as the end of the Cold War. The archives of Carlo Rubbia, Chris Llewellyn Smith, and Luciano Maiani promised to shed new light on many aspects of the LHC’s saga, through emails, letters, reports, and even informal notes from some of the key figures behind the LHC’s implementation. Nevertheless, this material of over 20,000 pages wasn’t digitized, and I had to examine it in person by spending some time at CERN.

It was at this juncture that the assistance provided by the grant-in-aid from the Center for History of Physics of the American Institute of Physics proved particularly valuable, since it covered the entirety of my expenses during my stay at CERN, thereby allowing me to complete my study on the history of the LHC. One should not neglect the fact that behind any grant and institution, there are people who make all of this possible. Therefore, I would like to deeply thank Gregory Good, the former director of the AIP Center for History of Physics, and Stephanie Jankowski, senior administrative support, for their considerable support. Furthermore, I must add that I would not have been able to navigate through this chaotic material so efficiently without the substantial assistance of CERN archivists Anita Hollier, Jens

by Grigoris Panoutsopoulos

By Grigoris Panoutsopoulos, Ph.D. Candidate in the Department of History and Philosophy of Science, National and Kapodistrian University of Athens

INVESTIGATING THE HISTORY OF THE LARGE HADRON COLLIDER

(AND HOW A GRANT FROM AIP HELPED IN THIS)

The office, generously provided by CERN, where I conducted my research.
Credit: Grigoris Panoutsopoulos.

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Vigen, and Sandrine Reyes. So far, so good. Why is it, however, so important to write the history of such a scientific machine?

The significance of writing the “biography” of a scientific machine

We, as historians of physics, have grown accustomed to focusing mostly on the history of concepts, scientists, or even institutions. On the other hand, much less importance has been placed on the material culture of physics, despite noteworthy exceptions, such as the classic *Image and Logic* by Peter Galison. Yet its role in the development of physics is both crucial and multidimensional. More so in the case of high energy physics (HEP), where, as its enormous scientific machines grew more complex, more costly, and more fundamental for the existence of the field, the center of gravity of experiment shifted from the experimentalist to the scientific infrastructures. Around these machines, which have become the backbone of the experimental process, the way of doing physics began undergoing a transformation, as the field developed even stronger links with nation states, industry, and diplomacy. Thus, scientific machines, such as the LHC, crystallize so many distinctive characteristics of Big Physics that the thorough study of their history becomes essential for understanding its very development.

In this research project, I am focusing on a period long before the collider even began operations in order to understand what takes place during the design stage of a Big Science infrastructure, when its technical and scientific aspects have not yet been strictly formed. Within this frame of reference, I attempt to deal with the significance of historical contingency through the decisions, the debates, and the tensions revolving around the scientific machine from a period when its "black box" still lay open.

Designing the LHC as the first post–Cold War Big Science project

As I was looking into the archives, a nagging question arose in my mind: What reasons lie behind the fact that while the American Superconducting Super Collider (SSC) was cancelled in 1993, its competitor, the European LHC, not only ended up being built, but even led to the discovery of the holy grail of the experimental HEP, the elusive Higgs boson? There exist historical studies (Riordan et al. 2015; Kevles 1997; Riordan 2000, 2001) that investigate the demise of the gargantuan SSC. The reasons presented are fairly plausible: the redistribution of funding toward other scientific fields, the immense cost of the collider, the inability of high energy physicists to convince the public regarding the wider societal impact of the project, and primarily, the end of the Cold War. What was different, then, in the case of the LHC that allowed it to continue its course, in contrast with its competitor?

The answers we find in the archives are many. I shall try to briefly highlight two of the most fundamental ones. Firstly, despite the fact that the Cold War came to a close in the early 1990s and therefore the gigantic scientific projects fostered by the competition between the US and the Soviet Union were becoming things of the past, in Europe, geopolitical considerations during the same period continued to significantly affect science policy. Following the dissolution of the USSR, a new European integration came to the fore, as a number of countries that had been members of the Eastern Bloc until 1990 were yearning to join Western Europe. The archival material provide us with ample evidence that the CERN leadership, interpreting the historical conjuncture correctly, managed to present the LHC as a catalyst of this integration. The new states would be given the opportunity of participating in the construction of an astonishing scientific machine based on cutting-edge technology. In this way they could construct scientific, industrial, and diplomatic networks and strengthen their relationship, both symbolically as well as substantially, with Western Europe. The utilization of this momentum, through the channels of science diplomacy, was crucial to the implementation of the project.
Secondly, CERN’s management realized quite early that Big Science itself was also undergoing a radical transformation (Crease and Westfall 2016; Hallonsten 2016). Hence, compared to the national and extraordinarily expensive SSC (where, in contrast with CERN, all of the infrastructures had to be built from scratch), the European organization suggested a more flexible, cheaper, and global project that would unite HEP communities and industries all over the world. The LHC would be built on worldwide cooperation rather than state antagonism, on the shared use of infrastructures by researchers globally, and on a closer relationship with industry. The collider, which was promoted as a “world machine,” was one of the first scientific projects of the post–Cold War period and would function as a prototype for worldwide collaborations and for the transformed Big Science of the new era (Panoutsopoulos and Gavroglu 2022).

In closing, I would like to underscore that all of the ideas presented above would be a lot poorer were it not for the constructive suggestions of my supervisors, Kostas Gavroglu and Theodore Arabatzis.

References
Here’s a bit of trivia: Did you know that librarians and historians like games? Well, we’re all obsessed with Wordle, like much of the world, but we also go hard at online Pictionary during informal work gatherings. The Center for History of Physics (CHP) offers three fun games about the history of the physical sciences: Heads Up, Phystory, and Scientists of Catan, available at www.aip.org/history-programs/physics-history/educational-games. In 2020, the librarians and archivists at the Niels Bohr Library & Archives decided that we’d like to get in on the games game and hosted a virtual trivia event with CHP. It was so much fun that we repeated the event during fall 2021, with completely different questions, of course!

This time we did a round called “Timeline Terror,” which was fun but tricky. Teams had to arrange events in order, starting with the earliest and ending with the most recent. If you are up for the challenge, here are some of the groups of events our players had to order.

First, an example with answers so you can see how it works.

EXAMPLE:
A. The titanic sunk in the North Atlantic on its maiden voyage.
B. “My Heart Will Go On” won an Academy Award for Best Song, getting Celine Dion one step closer to EGOTing.
C. John Jacob Astor IV was born, famous for being rich and unlucky in travel choices.
D. Leonardo DiCaprio and Kate Winslet starred in the movie Titanic, launching a thousand memes.
E. Millvina Dean, the last titanic survivor, died.
Answer: C, A, D, B, E

Arrange the events within the groups below. Good luck! Answers are on page 29.

GROUP 1:
A. Eunice Foote presented her paper to the American Association for the Advancement of Sciences on how carbon dioxide and water vapor absorb and retain heat more than other gases, effectively making her the first to predict the greenhouse gas effect.
B. Mary G. Ross appeared on the television show “What’s My Line?” where contestants had to guess if she was the person who “designs rocket missiles and satellites for [Lockheed Aircraft].” (She was.)
C. Maria Mitchell was the first woman to gain membership to the American Association for the Advancement of Science in the same year that the first hippopotamus was seen in Europe since the Roman era. (The hippo was sent from Egypt to the London Zoo.)
D. “Human computer” Katherine Johnson calculated the trajectory for the flight that made Alan Shepard the first American in space.
E. Inge Lehmann, a Danish geophysicist, discovered that the earth has a solid inner core and a molten outer core the same year the current Queen Elizabeth II became heir presumptive.
F. Carolyn Beatrice Parker earned a postgraduate degree in physics (the first African American woman to do so) the same year Katharine Hepburn and Humphrey Bogart starred in their first movie together.

Maria Mitchell, second from left, works with telescopes outdoors with a group of students. Catalog ID Mitchell Maria D1. Credit: Vassar College Library, courtesy of AIP Emilio Segrè Visual Archives, Physics Today Collection.
GROUP 2:
A. Claudia Alexander started working at NASA’s Jet Propulsion Laboratory the same year Ferris Bueller played hooky.
B. Laura Bassi was elected to the Academy of Sciences of the Institute of Bologna mere days before Joseph Haydn was born. Coincidence? Yeah...probably.
C. Nicole-Reine Lepaute predicted the return of Halley’s Comet (and was off by only off by 1 month). Meanwhile, J. Rechendorf patented the classic pencil with an eraser top that we all know and love.
D. Maria Margaretha Kirch was the first woman to discover a comet, though her husband received the credit, in the same year that Queen Anne acceded to the English throne.
E. During her brilliant career, shortened by an early death, Wang Zhenyi published at least 12 books, including poetry, and scientific and mathematical works on such topics as the movement of equinoxes and the relationship between lunar and solar eclipses. She died the same year as another revolutionary female writer, Mary Wollstonecraft.
F. Émilie du Châtelet’s French translation of Newton’s *Principia* was published posthumously this year, just in time for the outbreak of the Seven Years’ War.

GROUP 3:
A. Willie Hobbs Moore wrote her dissertation, “A Vibrational Analysis of Secondary Chlorides,” making her the first African American woman to obtain a PhD in physics, in the same year Shirley Chisholm ran for president.
B. Soviet cosmonaut Valentina Tereshkova became the first woman in space when the Vostok 6 mission launched.
C. Chuck Berry told Beethoven to roll over the same year that Chien-Shiung Wu conducted her experiment confirming that parity is not conserved.
D. Asteroid 16277, orbiting between Mars and Jupiter, was named in honor of Esmeralda Mallada by the Minor Planet Center of the International Astronomical Union the same year Melissa McCarthy, Allison Janney, Jason Statham, Jude Law, Miranda Hart, Rose Byrne, Bobby Cannavale, Peter Serafinowicz, and Morena Baccarin appeared in a movie together.
E. Marie Curie won her second Nobel Prize (in chemistry) for the discovery of polonium and radium.
F. Maria Luisa Aguilar became the first professional astronomer from Peru to join the International Astronomical Union. That same year, “Lucy,” a partial *Australopithecus afarensis* skeleton, was discovered in Ethiopia.

GROUP 4:
A. Maria Cunitz published her book, *Urania propitia*, filled with astronomical tables that made Kepler’s work more accessible to the public. In the same year, across the Atlantic, Lord Baltimore granted the colony of Maryland the ability to have a bicameral legislature.
B. Martine Bertereau, aka Baroness of Beausoleil and Auffembach, published the discovery of 150 new mines in “*Véritable déclaration de la découverte des mines et minières,*” as well as her technique to discover underground water and mineral deposits, the same year Galileo’s *Dialogue Concerning the Two Chief World Systems* was published in Florence.
C. Sophie Germain won a prize (on her third try) from the Paris Academy of Sciences for her paper “Recherches sur la théorie des surfaces élastiques” on elasticity theory during the Year Without a Summer.
D. Caroline Herschel discovered her first comet. (Her brother also did something this year.) The same year, Robert Burns’s *Poems, Chiefly in the Scottish Dialect* was published and proved so successful that Burns abandoned his plans to move to Jamaica.
E. Maria Clara Eimmart illustrated a total eclipse as observed through her telescope the same year England and Scotland agreed upon the Treaty of Union, creating Great Britain.
F. Eleanor Anne Ormerod was the first woman admitted to the Royal Meteorological Society (UK) in the same year Gilbert and Sullivan’s *H.M.S. Pinafore* debuted in London.

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GROUP 5:
A. Vera Rubin joined the Carnegie Institute of Washington in the Department of Terrestrial Magnetism the same year The Beatles asked for help via song and movie.
B. Shirley Ann Jackson was the first woman and first African American appointed chair of the US Nuclear Regulatory Commission (NRC) the same year astronaut Tom Hanks said, “Houston, we have a problem.”
C. Annie Easley was hired by the National Advisory Committee for Aeronautics to be a computer. That same year Claudette Colvin, a 15-year-old African American girl, was carried off a bus and arrested in Alabama for refusing to give up her seat.
D. Kalpana Chawla was the first woman of Indian origin to go to space the same year the Spice Girls released their perfect debut single, “Wannabe,” in the US.
E. Mae Jemison, a physician and NASA astronaut, became the first African American woman to go to space on the space shuttle Endeavour. In that same year, The Mighty Ducks debuted on movie screens and spawned its very own namesake professional hockey team.
F. June Bacon-Bercey was the first African American woman to earn a degree in meteorology. She earned her degree from UCLA in the same year Jimmy Stewart spent a significant amount of time staring out a window.

GROUP 6:
A. Margaret Bryan published Lectures on Natural Philosophy, a collection of 13 lectures on hydrostatics, optics, and acoustics, the year that British engineer Isambard Kingdom Brunel was born.
B. Cecelia Payne-Gaposchkin proposed that hydrogen was the primary element in the makeup of stars, in contrast to the previously held understanding that stars had the same elemental composition as Earth. This discovery coincided with an event that changed the lives of high schoolers everywhere: Jay Gatsby looked at a green light.
C. Annie Jump Cannon published her first catalog of stellar spectra. Her method of classifying stars by temperature is still used today. That same year, an anarchist shot the President of the United States at the Pan-American Exposition in Buffalo, New York.
D. Dorothea Klumpke, an American astronomer, was appointed the director of the Bureau of Measurements at the Paris Observatory, the same year the first Sherlock Holmes story was published.
E. Henrietta Swan Leavitt was made head of stellar photometry at the Harvard College Observatory just before her untimely death from stomach cancer. That same year Charlie Chaplin directed his first feature-length film.
F. Mary Somerville translated and expanded Pierre-Simon Laplace’s Mécanique Céleste as Mechanism of the Heavens, and she said “I translated Laplace’s work from algebra into common language.” William Lloyd Garrison began publishing The Liberator, an antislavery newsletter, in the same year.
PROJECT PHaEDRA

By Nico Carver, Librarian for Collaborative Programs, Center for Astrophysics, Harvard & Smithsonian

Introduction
From 1750 through 1990, astronomers and staff of the Harvard College Observatory used handwritten notebooks to document their observations, instrument readings, logs, and calculations. This collection of over 2,500 notebooks is an important resource for researchers interested in the history of astronomy. A large percentage of the notebooks in the collection belonged to the Harvard Computers, a group of women who made many important contributions to our understanding of stellar classification, variable stars, and stellar spectra by carefully studying the astronomical photographs recorded on glass plates by telescopes at the observatory, and its satellite locations. Starting in 2016, staff at the Wolbach Library at the Center for Astrophysics | Harvard & Smithsonian started an initiative to make this remarkable collection more accessible to researchers by cataloging, digitizing, transcribing, and enhancing the metadata of the notebooks. This new initiative is called Project PHaEDRA, an acronym that stands for Preserving Harvard’s Early Data and Research in Astronomy. This article will introduce readers to Project PHaEDRA and the historical importance of this collection of primary source materials.

Project PHaEDRA Background
Project PHaEDRA has already gone through a number of phases since its inception in 2016. The first phase with any project like this one is to catalog the items in the collection. Luckily, the Wolbach Library team discovered that this work had already been mostly completed by previous employees of the Center for Astrophysics (CfA). The first handwritten catalog of this material, dating back to the 1970s, had later been transferred to a typewritten version and finally to an Excel spreadsheet. This work of archival description allowed for Project PHaEDRA to hit the ground running. The information from the catalog was transferred to a SQL database and an online finding aid available on the Project PHaEDRA website. This work set the stage for the next phase of the project: digitization. High-resolution photographs of every notebook page were captured by the Harvard Library Imaging Services team. This digitization phase was started in 2016 and completed in late 2019. The Wolbach Library is fortunate to be colocated with the staff of the Astrophysics Data System (ADS). The ADS team worked with Wolbach to make all of the digital photographs of the notebook pages available online and even searchable through ADS.

With the workflow in place for the collection to be described, digitized, and online, the Wolbach Library was then ready to ask the public for their help to transcribe the notebooks. Full transcription of the notebooks began in 2017 on the Smithsonian
Transcription Center website with its community of “volun-
peers.” Full transcription is a very worthy goal, but with over
200,000 pages of material will take many years to complete.
In January 2020, the volunteer transcription efforts were ex-
panded to a second website called the “Zooniverse” with the
express goal of identifying and transcribing “plate numbers.”
These are the unique identifiers for the glass plate photographs
that provide a direct link between the notebooks of Project
PHaEDRA and the glass plate photographs of the night sky.
These glass plates are being digitized in another project called
DASCH: Digital Access to a Sky Century @ Harvard. Today,
anyone with an interest in this material can meaningfully en-
gee with it and help the project by volunteering on either the
Smithsonian Transcription Center or Zooniverse platforms.
Every month, volunteers from both platforms join the Wolbach
Library staff on Zoom for a virtual office hour. This spring,
the theme for the office hours is a book club. Volunteers will
be able to discuss popular nonfiction books about the history
of women in astronomy and spaceflight, including *The Glass
Universe* by Dava Sobel, *Hidden Figures* by Margot Lee
Shetterly, and *Rise of the Rocket Girls* by Nathalia Holt.

**Historical Importance**
The Project PHaEDRA collection includes the notebooks from
hundreds of individuals who worked at the Harvard College
Observatory over the past 270 years. While some are still
well-known figures in the field of astronomy today, many of
these individuals are lesser-known, and for many more we
currently know nothing about them other than their names or
initials. One of the goals of Project PHaEDRA is to provide
educators, researchers, scientists, and historians the tools and
materials they need to better research these individuals and
tell their stories. To wrap up this article, here are a few short
biographical sketches for historical figures whose work is in-
cluded in Project PHaEDRA.

**Annie Jump Cannon** was very prolific; of the 2,518 notebooks
in the PHaEDRA collection, 183 of them belonged to Cannon.
Her specialty was classifying stars based on their spectra. She
was able to classify stars very quickly and accurately, and still
holds the record for the most stars manually classified in a sin-
gle lifetime. Her system for classifying stars (OBAFGKM) is
still well known and used today.

**Helen Sawyer Hogg** began her career at the Harvard College
Observatory working with Harlow Shapley. She went on to be-
come one of the world’s great experts in globular clusters. Her
research specifically delved into the study of variable stars in
globular clusters and the importance they play in understand-
ing stellar evolution.

**Rebecca Jones** was an astronomer well known for her work
on galaxies at the Harvard College Observatory in the 1930s.
She is also the codiscoverer of the Jones-Emberson 1 plan-
etary nebula in the constellation Lynx. After World War II, she
went on to be a pioneer in early punch card computers (then
called “giant electronic calculators”) and worked on the moon
orbit calculations that would later be used by NASA’s Apollo
missions.

**Henrietta Leavitt** worked primarily on variable stars, especial-
ly the variable stars in the Magellanic Clouds. Her work on
variable stars in the Small Magellanic Cloud led her to discov-
er what is now known as the period-luminosity relationship for
classical cepheid variables or, more simply, Leavitt’s law. This
discovery provided for a “standard candle” that could be used
for measuring distances to anything in the universe, including
other galaxies.

**Cecilia Payne-Gaposchkin** discovered the chemical compo-
sition of stars as a graduate student, finding that stars were
mostly made of hydrogen and helium which was not known at
the time. She went on to study stellar atmospheres and stellar evolution. She was the first woman to be promoted to full professor and to head a department at Harvard.

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Screenshot of the Star Notes project on the Zooniverse. Credit: John G. Wolbach Library, Center for Astrophysics | Harvard & Smithsonian.
TO THE EDITOR:

For me, as a scholar and writer, the test of a good archive is whether it makes me salivate. And the Niels Bohr Library & Archives is at the top of the menu! I find myself going back to your splendid collection over and over while writing my book about Wernher von Braun—building the Moon rocket, in Alabama, at the time of George Wallace. Since “rocket science” is mostly little ol’ engineering, and I am a historian of civil rights rather than science, I doubt it would even have occurred to me to hit something as fancy as a physics archive had I not encountered the AIP while doing research online. That is why I am so grateful that the collection has been digitized and therefore made accessible—during a pandemic, again and again (especially the Samuel Goudsmit papers and the oral histories)—to the scholarly tourist like me, who occasionally needs to get the juices flowing to face another day at the typewriter. Oh, and it has enriched the work itself more than I could have dreamed. Thank you!

Diane McWhorter

Author of *Carry Me Home: Birmingham, Alabama—The Climactic Battle of the Civil Rights Revolution*, winner of the 2002 Pulitzer Prize for General Nonfiction

INTRODUCING INITIAL CONDITIONS: A PHYSICS HISTORY PODCAST

By Maura Shapiro and Justin Shapiro, PhD

Maura Shapiro: Mic check… Peter Piper picked purple pickles… how do I sound?

Justin Shapiro: That sounded great! Let’s dive in (this will become my catch phrase)!

Maura: We are excited to announce that the Niels Bohr Library & Archives (NBL&A) is releasing a podcast!

Justin: I’m Justin Shapiro—no relation to Maura—and I’m excited to be working on this project! I received my PhD from the University of Maryland, College Park in 2020. My academic interests include the history of the environment and technology, environmental justice, and the history of climate change. I am very enthusiastic about broadening my research to include the history of physics.

Maura: And I’m Maura! I graduated from the University of Pittsburgh with a BS in physics and a BA in communication and rhetoric last spring, 2021. I started working with NBL&A and the Center for History of Physics as a Society of Physics Students summer intern. I immediately fell in love with the history of physics and sharing stories that have previously been overlooked.

Justin: Initial Conditions: A Physics History Podcast will be available starting summer 2022 on all major podcast platforms! In this weekly podcast, Maura and I will tell stories about physics history, inspired by the collections of NBL&A.

Maura: Every physics problem starts with initial conditions that describe the circumstances for the physics. These conditions, like the mass of an object, the force of gravity, or the height a pendulum is released, provide the context for the laws of physics to operate in. In Initial Conditions—the podcast, we hope to provide the context in which physical discoveries happen.

Justin: We will dig through the recently acquired Wenner Collection, the Niels Bohr Library & Archives, and the oral history interview collection to uncover the stories behind the physics. NBL&A has an extensive collection, and we are excited to add new stories to the history of physics and some of our own perspectives on the past.

Maura: In this podcast, we hope to highlight historically marginalized stories in physics and challenge the narrative that brilliant scientists worked alone to achieve great discoveries.

Justin: The first season is going to cover a wide range of topics, including climate science since the mid-nineteenth century, pseudoscience, and the history of African American physicists.

Maura: I’m looking forward to talking about women physicists, historical romance, and counterculture quantum mechanics!

Justin: Along with the podcast, we will host additional resources on our website, aip.org/initial-conditions (live in June 2022).

Maura: We will post blogs, transcripts, bibliographies, additional reading, and digitized archival materials so you can further investigate the topics that interest you!

Justin: And before we sign off, a quick thank you to the Alfred P. Sloan Foundation for supporting this podcast. Look out for our first episode in summer 2022!
FEATURED ORAL HISTORY: XIMENA CID, PhD

By Ximena Cid, Chair of Physics Department at California State University-Dominguez Hills, with Sam Holland, AV/Media Archivist, Niels Bohr Library & Archives

Ximena Cid was born and raised in Sacramento, California. She is of Yaqui and Chicana descent. She obtained her bachelor’s degree in astrophysics from the University of California, Berkeley, and her master’s and PhD in physics from the University of Texas at Arlington under the guidance of Dr. Ramon Lopez. She was faculty at North Lake College before she completed a postdoc position with the University of Washington’s Physics Education Group under the guidance of Dr. Lillian McDermott. She then joined California State University, Dominguez Hills (CSUDH), where she is currently associate professor and chair of the physics department. She is one of the first, if not the first, self-identified indigenous person to chair a physics department in the country and one of very few Chicanas/Latinas to do the same.

Ximena is very active in organizing for the American Association of Physics Teachers (AAAPT) and was named a fellow of the organization in 2021. She is a past board member of the National Society of Hispanic Physicists (NSHP) and organized the Día de la Física/Day of Physics Conference held in conjunction with the Society for the Advancement of Chicanos and Native Americans in Physics (SACNAS) national conference, of which she is a life member. In 2020, she helped found the Society of Indigenous Physicists (SIP) and has been active in building community within this new professional society.

On November 6, 2020, Ximena was interviewed by David Zierler, former Oral Historian for the Center for the History of Physics at AIP. The resulting oral history interview explores her path through academia, and the following excerpts give the reader some insight into what has shaped who she is and where she is now as a result of her journey.

On her early interest in space:
I think I’ve always been interested in space. As a kid, I would crawl out our window onto the roof and look at the stars. For
full moons and lunar eclipses, my father would wake us up in
the middle of the night and use his military binoculars to allow
us to look and see what the moon looked like and what stars
look like, planets would look like. And so, I’ve always kind of
loved space.

On adjusting to studying STEM at UC Berkeley:
And those of us that were in STEM programs, very few of us
actually finished our majors in STEM. And so, it became a cul-
ture shock. The language that people would speak, the word
choices that we had, as liberal as Berkeley likes to be, it is very
much a White space. And in the STEM field, it very much is
a White male space. Our faculty were all pretty much White
male or foreign. So, there weren’t a lot of moments in my first
two years where I felt comfortable. And actually, there were a
couple of classes where I was the only woman, the only woman
of color in my classes. And my Physics 2 class, your second-
semester calculus-based intro class, I ended up having to take
it three times.

On the impact of external feedback and finding mentors:
Because when you’re constantly having people tell you that
you’re not good, that you don’t belong here, whether right to
your face or the subtleties of it, that starts to affect you. So
even if you do have a lot of confidence—it started to affect me
by my third year. And so I started really trying to figure out,
“Well, what is it that I like to do? And can I actually do this?”
And it was also around that time that I started to find mentors.
I started doing research around that time. So that same class
about human physiology and space, it was taught by grad stu-
dents, and they were working in the space plasma lab. So, they
had posted an announcement, “We need undergrads to do some
data analysis. It’s a paid position.” And I was like, “I’ll take
that job. That means that I can stop working at this other job off
campus and work in a research lab,” not knowing what the hell
you do in research, you know? But I was like, “It’s paid. I’ll go
do that.” And that helped a lot as well because the advisor that
I had for that group, Dr. Janet Luhmann, she was amazing. She
was so supportive.

On finding SACNAS:
SACNAS was also the first time I ever saw someone who was
like me really talking about their culture while they were shar-
ing their science. And it was Keivan Stassun, who is now I
think the director of the Vanderbilt-Fisk Bridge Program. But
he was talking about astrophysics, and I was sitting in that ses-
sion while he was also showing pictures of his family, and his
mom, and his culture, and it was so overwhelming for me be-
cause in my classes and my research lab at Berkeley, I didn’t
have anybody talking about their culture and how it influenced
who they are as a scientist.

On choosing her graduate school path:
I knew that I really liked space physics over astrophysics. I still
like space, and my first love is going to be about space. But I
really liked the fact that within our solar system, within a few
days of an event that happens on the sun, we on earth can ex-
perience that. That proximity, right? Something that could in-
fluence our everyday lives. Magnetic storms influence so many
things on Earth. The Northern Lights, our phenomenon of the
power grids, oil pipelines, airplane travel, all of these things are
affected by space, whether something happens on the sun, or
ten days later, you see all those effects happening on Earth. And
I thought that was very fascinating, whereas in astrophysics,
outside of the solar system, something happens, it’s so far away
that it’s never really going to affect us.

On teaching and mentoring students:
For me, I am very much focused on making sure that I’m work-
ing with my community. So, for me, I’m always dedicated to
creating open, welcome spaces in my classrooms. I try very
hard to provide exposure for our students and to all the differ-
ent subfields of physics, or astrophysics, or even engineering.
[…] I tend to talk about scientists that aren’t necessarily talked
about. So, when we talk about the foundations or the history of
science, you’re always talking about Newton, you’re always
talking about Einstein, you’re always talking about these dif-
ferent people.

But I bring in the history of the Americas and how people in the
Americas contributed to STEM. My nonscience courses, I often
have our students write a paper where they’re thinking about
some piece of their own identity. Whether that’s their gendered
identity, their ethnic identity, their first-gen identity, something,
and how that connects with STEM so that we can start to see
ourselves in STEM.

On being a “first”:
I think that it’s very important for us to acknowledge firsts.
But there’s also a downside to that because we get fixated on
that piece of our identity. And it also ignores, at least for me
as an indigenous and Chicana woman whose people were here
continued on page 20
before colonialism and conquest, I grew up learning about our ancestors and the value that they created and contributions to STEM that they had, and it was never in our formal education. I wasn’t the first to go to college in my family. My parents were educated. And all of my brothers and sisters, we all have UC degrees for our bachelors. But there’s this tension about that, right? By being a first, that becomes a very salient piece of your identity, and you become praised for those things that have nothing to do with you being a scientist.

And so, you often get labeled these things, and that’s your primary identity that people want to acknowledge when you walk into a room, when sometimes we walk into a room, and I want to be acknowledged as a scientist as opposed to the first. But also, it ignores and continues to erase traditional knowledge. So I grew up knowing that the Maya civilization created the concept of zero independent of European scientists and mathematicians. I grew up knowing that the Mayan calendar was more advanced than any other calendar in the world. I grew up knowing that the Azteca, the Inca, the Maya civilizations and the pyramids they created were superiorly advanced than what people acknowledge in formal education and STEM.

And so, there’s always that kind of tension as well that when we continue to talk about our first status, it also reinforces the Western view of academia. And it also ignores the fact that there are generations of lost knowledge, right? So, when I talked this year [2020] about being the first indigenous chair, it’s not because I am the first indigenous [physics] chair in the States. But I’m probably the first to have my cultural ties to my indigeneity, right?

On the weight of working toward diversity and inclusion in science:

How does science influence diversity? I think that the more diverse people we have, myself included, my position, I can use my voice to talk about science in a different way. Because I don’t think the same way that a lot of my White colleagues do. I think that’s always been true. I know history that is never acknowledged, and I bring that up in my classes. And by

Ximena Cid stands with some of her students in front of a mural. Credit: CSUDH.
doing that, I’m influencing the next generation, and it’s a lot of responsibility to be aware of that. It’s a lot of pressure to be aware of that. And I go through my own phases of like, “It’s too much. I don’t want to be responsible for everybody else. I just want to be responsible for myself.” But I don’t have that freedom, and I know that, and I’m aware of it, and I acknowledge it. And there are days that I do very well at acknowledging [my privilege] and owning it, that I don’t have that freedom, that I do have a very strong influence on the students that I work with and the colleagues that I engage with. But there are other days that I’m just like, “Ah, it’s too much pressure to think about all the accomplishments I’ve had, or all the firsts, or how that influences everybody else that is part of my community. That’s a lot of weight to carry all the time.”

But I know that each one of us has a huge impact. I can see it with my colleagues. And so, if I can see it with my colleagues, I know it’s happening with me, too.

References:

Cover image: Ximena Cid poses with a plasma globe. Credit: CSUDH.

Group photo, including Ximena Cid, at the SouthWest Research Institute (SwRI). The group was gathered for Día de la Física 2018, hosted by the National Society of Hispanic Physicists. Credit: NSHP.
Change is afoot at the Niels Bohr Library & Archives (NBL&A)—we’re growing! Last year, construction started on a many-step process to expand our space and to ameliorate our existing spaces. Excitingly, the first step is complete: we now have a vault in the basement of the American Center for Physics, devoted entirely to the collections of the Niels Bohr Library & Archives. The vault is a huge improvement for the institution.

Thanks to the vault, we now have the opportunity to expand our collections. When NBL&A was considering the Wenner Collection as a potential acquisition prior to 2018, there was almost no room left in the rare book area. The plan for its acquisition served as an impetus to pursue the vault project, which had been an idea floating around for a few years. Now that the vault is built, we have a beautiful permanent home for the Wenner Collection and room to further expand our rare books collection. We also have the opportunity to consider taking in more and larger archival collections than we had the capacity for before the vault was built. About half of the vault will be devoted to rare books and half will be devoted to archival collections, most of which are paper based.

The vault has the highest-quality environmental controls possible, meaning that we can take better care of our existing and future collections for many decades to come. The American Center for Physics (ACP), the physical home of NBL&A, was built in the 1990s, and though the collections spaces were designed with humidity control in mind, the vapor barrier was not properly sealed during construction. Humidity and temperature in the collection spaces often reach levels that are considered outside of best practices and have threatened our collections with mold and other factors. The new environmental controls will eliminate this threat. The promise of longevity for our collections is a major breakthrough for NBL&A.

Although there was an immediate need to house the Wenner Collection, the idea for the vault had been in the works since the early 2010s because of the space and environmental issues in the current collection areas. The advent of “the cloud” also presented a unique opportunity for an ideal location. The basement of ACP has a large room which was originally used for its servers. Because it was built for servers, the room has a raised floor, which mitigates the risk of flooding, and a waterless fire suppression system, which is gas-based and would not harm books (or servers), should a fire occur. When the room started to empty out as the server space moved to the cloud throughout the 2010s, the idea for the vault in this space became a distinct possibility.

In addition to the ideal location, the vault would not have been possible without funding. Melanie Mueller, director of NBL&A, applied for and received a grant from the National Endowment for the Humanities for the vault. Once this funding was secured, it was easier to find support from additional resources, and the project was expanded.

The vault is just the first step of our renovation. We also have a new processing room in the basement of ACP that was completed along with the vault, where we can do more processing and preservation tasks than were possible in the small processing area we have used up to this point. For example, we now have room for a machine that will make it possible to make custom-sized enclosures for materials. Next, the second-floor archival stacks will be renovated and fit with proper environmental controls. The former processing room, which is adjacent to the archival stacks, will be turned into a cold room that will house the Emilio Segrè Visual Archives and other audiovisual collections in conditions that are ideal for their material type. AV/media archivist Samantha Holland says that the construction of the cold room will give everyone peace of mind, particularly after the old photo room’s temperature controls broke during the humid part of the 2020 summer and the whole collection had to be moved in a rush. Finally, when the second-floor construction is done, the fourth-floor book stacks will also be renovated and fit with environmental controls. As an additional benefit, the environmental control systems will be completely separate from the rest of the building, meaning that ACP will be able to use less energy and can operate in a greener, more environmentally friendly way.

With this renovation project, NBL&A will be better able to safely house materials, expand our collections, and, most importantly, serve researchers for many years to come. In the words of Allison Rein, associate director of library collections and services, “An archive should last as close to forever as you can get, and we just got a little closer to forever.”

Thank you to Melanie Mueller, Allison Rein, and Samantha Holland for your invaluable contributions to this article.

This project has been made possible in part by an implementation grant from the National Endowment for the Humanities Sustaining Cultural Heritage Collections program. Any views, findings, conclusions, or recommendations expressed in this article do not necessarily represent those of the National Endowment for the Humanities.
Left side of the new vault. The tube in the upper-left-hand corner is part of the humidification/dehumidification environmental control system. Credit: Chip Calhoun.

We love the panel color and the hand crank system, which will require less maintenance than an automatic shelf movement system. Credit: Corinne Mona.

Monographs in the Wenner Collection, waiting patiently to be moved to their new home in the vault. Credit: Corinne Mona.

The right side of the vault is longer than the left. Credit: Corinne Mona.

The “vault” as it appeared on opening day of our building in 1993 when it was used as a server room. Credit: AIP Emilio Segré Visual Archives.
TO BOLDLY PRESERVE: MOVING FORWARD

By Jonathan Coopersmith, Department of History, Texas A&M University

The tens of thousands of people involved in space exploration know they are doing important work, expanding humanity’s reach beyond Earth’s atmosphere. Their speeches, their advertisements, their justifications all emphasize their importance in creating a better future.

Convincing them to preserve their history of creating that future, however, is another issue. Historians and archivists need to convince these space actors about the importance of collecting and preserving their history to also benefit the future. We also need to reach out to the retiring generations of space researchers, engineers, technicians, administrators, and users to capture their disappearing treasure of untapped personal histories about the first decades of spaceflight.

To explore these challenges and opportunities, nearly 100 historians, archivists, and museum curators gathered at the American Institute of Physics (AIP) in College Park, Maryland, with representatives of the space industry, records management, digital humanities, and libraries to examine the critical issues in creating, collecting, preserving, and accessing space archives. “To Boldly Preserve: Archiving the Next Half-Century of Spaceflight” clearly met a need: 96 people registered to hear 40 speakers in eight sessions on March 1–2, 2018.

The participants came from 66 universities, archives, museums, private firms, and federal offices in the United States and Bristol University in the United Kingdom. AIP proved a very welcoming and supportive host, including keeping the building open when the storm battering the east coast closed the federal government (and forced some conference participants to leave early to safely return home).

While demonstrating great interest in and a wide range of approaches for preserving and collecting space history, the To Boldly Preserve (TBP) conference revealed a diverse and fragmented community, limited by a lack of resources, especially time. Consequently, postconference efforts are moving in three basic directions: communicating within the community, providing information on useful tools, and reaching out to space actors.

Two major goals of TBP are to encourage communication and collaboration and to reduce the opportunity costs and other barriers to entry for space actors to preserve and collect their histories. TBP itself will not do any preservation or collecting; it promotes the importance of preserving space history and provides information and access about resources to accomplish those goals.

TBP has created an online toolkit of best practices, standards, examples, and resources for its professional communities and for the different audiences of space actors. The first iteration of www.toboldlypreserve.space provides potential preservers with issues to consider and resources to consult. To avoid reinventing the wheel, the website channels what already exists on other websites, as well as providing materials to address specific concerns of the space community, such as International Traffic in Arms Regulations (ITAR), trade secrets, and personal identifiable information (PII).

Our major 2022 initiative is creating an Index of Space Archives based in the Engineering and Technology History Wiki. Developed by a consortium of engineering societies, the Wiki collects “the documentation, analysis, and explanation of the history of technology; the scientists, engineers and business people who made these technologies happen; and on the history of the organizations to which these men and women belonged.” The goal of the index is to provide a comprehensive, easily accessible record of archival sources on the history of space exploration and exploitation for researchers.

TBP is currently resolving basic issues, such as the extent of coverage. Should the index include unconventional material such as speculative fiction, mythology, astrology, or crank theories? Another issue is the depth of coverage for entries. How much information should the index provide? Each file should have enough information to give a potential user a sense of what is there and where to go to learn more.

Also unknown is how big the index will become. The AIP Niels Bohr Library & Archives alone contains 353 space-related collections (defined by the keywords “space,” “NASA,” “satellite,” or “planet”). The overwhelming majority (over 240 collections or 70%) were oral history interviews, followed by large and small archives (76, 22%), manuscript biographies (28, 7%), and institutional histories (7, 2%). The index will cover thousands of collections.
Another 2022 goal is upgrading the website by reaching out to archives, societies like the Oral History Association, and other preservers of history to improve www.toboldlypreserve.space so users have a better sense of available services to help them. Almost every collection and preservation activity has options, ranging from hiring professionals to investing in some outside assistance to doing it yourself (DIY). For example, the Science History Institute and IEEE History Center offer oral history training, as do the Oral History Association and the Oral History Summer School. For the DIYers, the Smithsonian Institution, state historical societies, universities, and other groups provide guidance. At a more individual level (but easily scaled up to small groups and firms) is personal digital archiving. (See resource links below.)

TBP has also given a $2,000 grant in memory of Debbie Cohen, the 2018 conference organizer who also served as treasurer and director of finance and operations at Explore Mars, to support two SPACE 3.0 Foundation projects. The first effort aims to create a database of space history archives around the world. There are many organizations, libraries, and archives that house material on the people and organizations that have been involved with space, but there is no easy way to identify the location of these primary source materials. Based on discussions with numerous historians, SPACE 3.0 believes that this database would be of great value to researchers and help us identify the gaps.

The second SPACE 3.0 Foundation project will facilitate a series of small roundtables to better identify the challenges of commercial space history preservation and what is necessary to accomplish in the short and long term. These discussions are intended to lead to a conference and allow further scholarship in this critical area.

The SPACE 3.0 Foundation is a 501(c)(3) charitable organization with a mission to preserve space history. The Foundation supports the SPACE 3.0 Archives and its special collection on Space Business & Commerce; publication of the peer-reviewed history journal, Quest: The History of Spaceflight Quarterly; and its “One Small Step” grant program that offers resources to individuals and organizations needing funds for space history–related preservation projects.

For reaching academic peers, TBP-based sessions met at pre-COVID conferences of the Society for the History of Technology (SHOT), the Mutual Concerns of Air and Space Museums, and the Business History Conference, as well as the International Space University executive education training at the Seattle Museum of Flight. As COVID fades from pandemic to endemic, TBP intends to reach out to involve industry associations, community archivists, historically underrepresented groups, and peers outside the United States.

Like America, our greatest opportunities for collecting and preserving history of spaceflight lie ahead of us—if we act to take advantage of our opportunities.

Together with Gregory Good, Angelina Callahan, who was then the Naval Research Laboratory Historian, Debbie Cohen, and Jonathan Coopersmith, a Texas A&M University history professor, organized the To Boldly Preserve conference. He can be reached at j-coopersmith@tamu.edu or 979.739.4708.

Resource Links:
Last fall, a few of the NBL&A staff, namely, Audrey Lengel, Chip Calhoun, Sarah Weirich, and myself, completed a migration of the ESVA photo collections. The project required lots of time and attention from all of us, and we were so happy to see the photos finally transferred to their new home in our digital repository, Islandora.

In addition to lots of labor, the migration also required that we halt adding to and editing the digitally available photo collections. Basically, with all the data checking and wrangling we were doing, it would have been a nightmare if we were constantly making new versions of said data. So, in fall 2019, we made the choice to freeze all photo editing. Now that the migration is complete, I’ve been able to resume work on adding newly acquired photos to the ESVA collections. Many of these images were generously donated to ESVA in and since 2019, and it is very exciting to make them available.

Here is a selection of some of my favorite newly available photos.

John and Maureen Midwinter pose with two very adorable dogs in their home in Suffolk, UK, on August 14, 2019. The portrait forms a part of a collection of images taken in relation to a fiber optics oral history interview series conducted by Michael Duncan on behalf of Optica (formerly the Optical Society of America). Sadly, John Midwinter, whose research concerned single-mode fibers, passed away in 2021. In an Optica obituary it was said, “John Midwinter was a talented educator and scientist who will be missed by his many students, collaborators, and friends” (Optica 2021).
This photo depicts David Lockwood, Horst Störmer, Klaus von Klitzing, and Robert Laughlin at the 13th International Conference on the Electronic Properties of Two-Dimensional Systems (EP2DS), held in Ottawa, Ontario, on August 1–6, 1999. I enjoy the calming array of blue and gray colors in this photo, as well as the lovely architecture shown behind the physicists. David Lockwood, who donated this image and others from the EP2DS conference, told me the building to the right is the Fairmont Chateau Laurier Hotel, and the tower in the center is the Peace Tower of the Canadian Parliament Buildings. After seeing this collection, I’m inspired to add Ottawa to my list of places to visit one day!

Toshihide Maskawa (益川敏英) signing a book at a party that celebrated his winning the 2008 Nobel Prize in Physics. Credit: AIP Emilio Segrè Visual Archives, Physics Today Collection, courtesy of Kiyoshi Higashijima.

This photo is not part of an entirely new collection but is instead an addition to our ever-expanding Physics Today (PT) collection. Most of the photos seen in the PT collection were used or considered for the publication’s obituary section. When appropriate, my colleague at PT asks those sharing photos with the magazine if they would like their images to go to ESV A, as well. In this case, donor Kiyoshi Higashijima said yes! And so now ESV A and all NBL&A’s researchers have access to this lovely photo of Toshihide Maskawa, who sadly passed away in 2021 (Higashijima 2021). The photo was taken at a party that celebrated Maskawa winning of the 2008 Nobel Prize in Physics.

continued on page 28
This group photo was taken at the 1995 Founding Meeting of the National Society of Hispanic Physicists at the University of Texas, Austin. Sekazi Mtingwa shared this collection (as well as the next one you’ll read about) after working with AIP on an oral history interview, which is available online (Interview of Mtingwa 2020). Sekazi Mtingwa, Jorge Lopez, and David Ernst were kind enough to help me identify some of the attendees. If you recognize someone who is listed as “unidentified,” please let me know by emailing nbl@aip.org. I would love to properly credit everyone who took part in the founding of NSHP.

In January 2007, outside of Cape Town, South Africa, a group of physicists gathered to plan the establishment of the African Physical Society. Here is a group picture from their gathering, showing (from left to right) Alfred Z. Msezane from Clark Atlanta University; John Akintayo Adedoyin from the University of Botswana; Mmantsae Diale from the University of Pretoria, South Africa; Samuel Y. Mensah from the University of Cape Coast, Ghana; Francis K. Allotey from Kwame Nkrumah University of Science and Technology, Ghana; Charles McGruder from Western Kentucky University; Ahmadou Wagué from Cheikha Anta Diop University, Senegal; and Sekazi K. Mtingwa from the Massachusetts Institute of Technology. Their planning was successful, and on January 11–16, 2010, the inaugural meetings of the society took place!
In March 2017, Drs. C. Megan Urry and Catherine Cesarsky formed part of a group of astronomers who met at the Venetian Institute of Science, Letters, and Arts in Italy. They made the most of their time in Venice (as one should) by enjoying prosecco and dinner together the evening this photo was taken. To learn more about Dr. Urry, you can check out her oral history interview from July 1, 2020, available online (Interview of Urry 2020)!

These are just a few of the recently added images, and I have many more to make available! To explore the photo collections, please visit photos.aip.org.

References:

TRIVIA ANSWER KEY

These are the answers to the trivia on pages 10–12

Group 1: C, A, E, F, B, D
Group 2: D, B, F, C, E, A
Group 3: E, C, B, A, F, D
Group 4: B, A, E, D, C, F
Group 5: F, C, A, E, D, B
Group 6: A, F, D, C, E, B
DOCUMENTATION PRESERVED

Compiled by Chip Calhoun, Samantha Holland, K. Jae, and Melanie Mueller

Our report of new collections or new finding aids is based on our regular survey of archives and other repositories. Many of the collections are new accessions, which may not be processed, and we also include previously reported collections that now have an online finding aid available.

To learn more about any of the collections listed below, use the International Catalog of Sources for History of Physics and Allied Sciences at libserv.aip.org. You can search in a variety of ways, including by author or by repository.

Please contact the repository mentioned for information on restrictions and access to the collections.

NEW COLLECTIONS

Amherst College. Archives and Special Collections. Amherst College Library. P.O. Box 5000, Amherst, MA 01002, USA


Case Western Reserve University. Archives. 10900 Euclid Ave., Cleveland, OH 44106-7229, USA


Cornell University. Carl A. Kroch Library. Division of Rare and Manuscript Collections. 2B Carl A. Kroch Library, Ithaca, NY 14853, USA


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Dartmouth College. Rauner Special Collections Library. Hanover, NH 03755, USA


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Georgetown University. Library. Special Collections Division. 37th and O Streets NW, Washington, DC 20057, USA


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Institute for Advanced Study. Shelby White and Leon Levy Archives Center. 1 Einstein Drive, Princeton, NJ 08540, USA


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Jet Propulsion Laboratory. Archives. JPL Archive, MS 111–113. 4800 Oak Grove Drive, Pasadena, CA 91109-8099, USA


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Library of Congress. Manuscript Division. James Madison Memorial Building, First Street and Independence Avenue SE, Washington, DC 20540, USA


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Max-Planck-Gesellschaft zur Förderung der Wissenschaften. Archiv zur Geschichte der Max-Planck-Gesellschaft. Boltzmannstrasse 14, D-14195 Berlin-Dahlem, Germany


Eberhard Gross papers. Collection dates: undated.

Gerhard Haerendel papers. Collection dates: undated.

Tor Hagfors papers. Collection dates: undated.

Günther Hasinger papers. Collection dates: undated.


Karl Kompa papers. Collection dates: undated.


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Helmuth Möhwald papers. Collection dates: undated.

Ulrich Schmidt-Rohr papers. Collection dates: undated.


Vytenis Vasyliūnas papers. Collection dates: undated.

Siegbert Witkowski papers. Collection dates: undated.

McMaster University. University Library. Division of Special Collections. 1280 Main Street West, Hamilton, Ontario L8S 4L6, Canada


National Radio Astronomy Observatory. Archives. 520 Edgemont Road, Charlottesville, VA 22903, USA


New Mexico State University. Archives and Special Collections. Dept. P.O. Box 30006, Las Cruces, New Mexico 88003, USA


North Carolina State University. Special Collections Research Center, NCSU Libraries. Box 7111, Raleigh, NC 27695-7111, USA


Oberlin College. Archives. 420 Mudd Center, Oberlin, OH 44074, USA


Pennsylvania State University. Libraries. Special Collections Division. University Park, PA 16802, USA


Stanford Linear Accelerator Center (SLAC). National Accelerator Laboratory. Archives and History Office. 2575 Sand Hill Road, MS 97, Menlo Park, CA 94025, USA

Stanford Linear Accelerator Center Technical Division records. Collection dates: undated.


State University of New York at Buffalo. University Archives. 420 Capen Hall, Amherst Campus, Buffalo, NY 14260, USA


Tulane University. Howard Tilton Memorial Library. Special Collections Division. Manuscripts Collection. 7001 Freret Street, New Orleans, LA 70118, USA


University of California, Berkeley. The Bancroft Library. Berkeley, CA 94720-6000, USA


Physical chemistry at the University of California, Berkeley. Collection dates: 1980. Size: 28 cm; 1 microfilm reel; three 5 in. sound tape reels; 1 sound cassette.


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University of Chicago. The Joseph Regenstein Library. Department of Special Collections. 1100 East 57th Street, Chicago, IL 60637, USA


Jean-Paul Marchand papers. Collection dates: undated. Size: 0.5 linear feet (1 container).


University of Illinois at Chicago. Richard J. Daley Library. MC 234, 801 S. Morgan, Chicago, IL 60607, USA


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NEW FINDING AIDS

Case Western Reserve University. Archives. 10900 Euclid Ave., Cleveland, OH 44106-7229, USA


Case Western Reserve University. Kelvin Smith Library. Special Collections. 11055 Euclid Ave., Cleveland, OH 44106-7151, USA


Cornell University. Carl A. Kroch Library. Division of Rare and Manuscript Collections. 2B Carl A Kroch Library, Ithaca, NY 14853, USA


George Washington University. Department of Special Collections. University Archives. 2130 H Street NW, Washington, DC 20052, USA


Georgetown University. Library. Special Collections Division. 37th and O Streets NW, Washington, DC 20057, USA

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