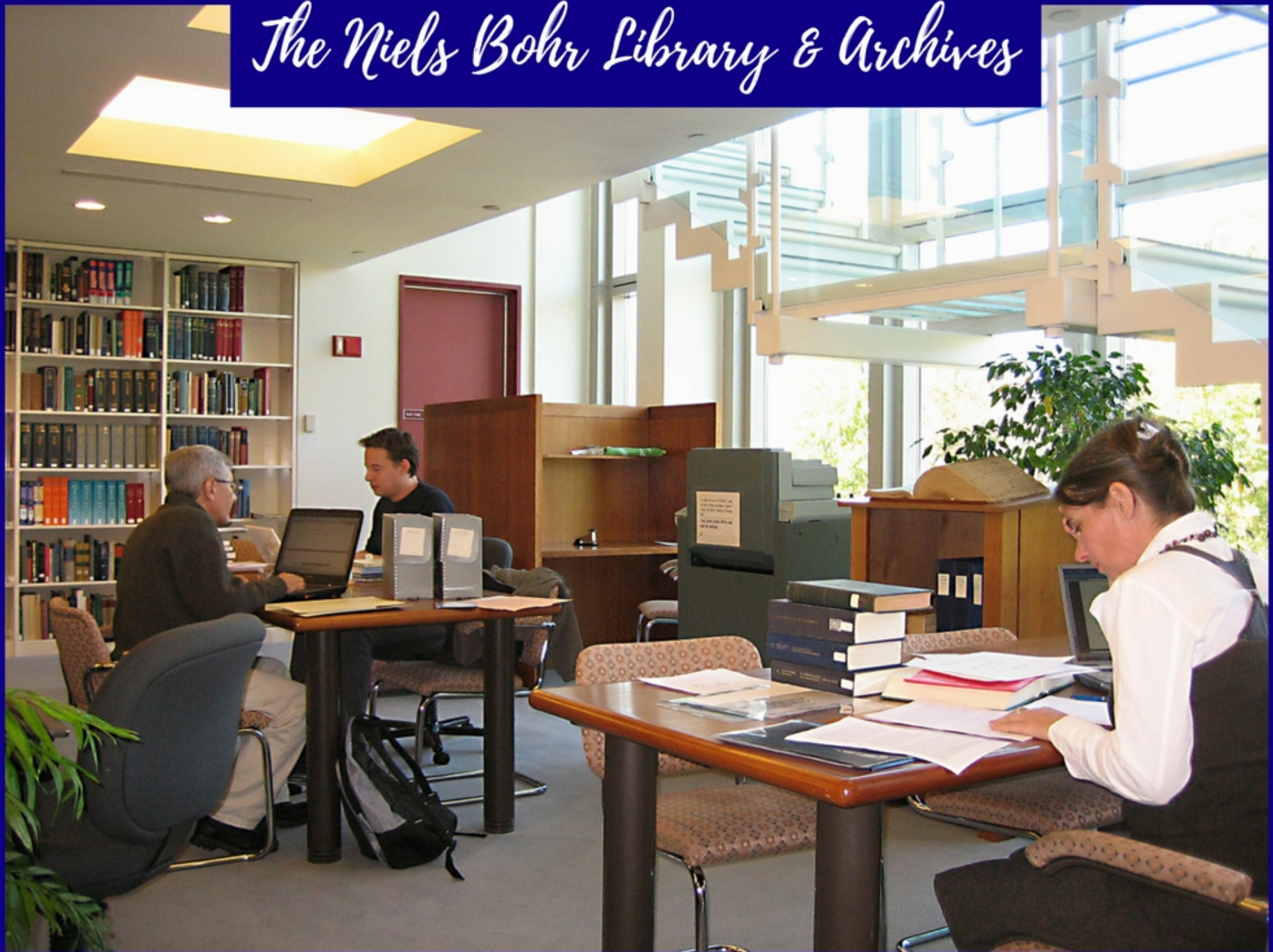


*Why the History
of Physics Matters:*

ONLINE OUTREACH

*Lexxi Reddington
& Tori Eng*

The Niels Bohr Library & Archives



Our Mentors



Melanie Mueller



Amanda Nelson



**HIGHLIGHT THE HUMAN STORY BEHIND
SCIENTIFIC DISCOVERIES WITH
ARCHIVAL DOCUMENTS AND IMAGES**

Purpose

Why Does the
History of Physics
Matter?



HISTORY INVOLVES A COLLECTION OF

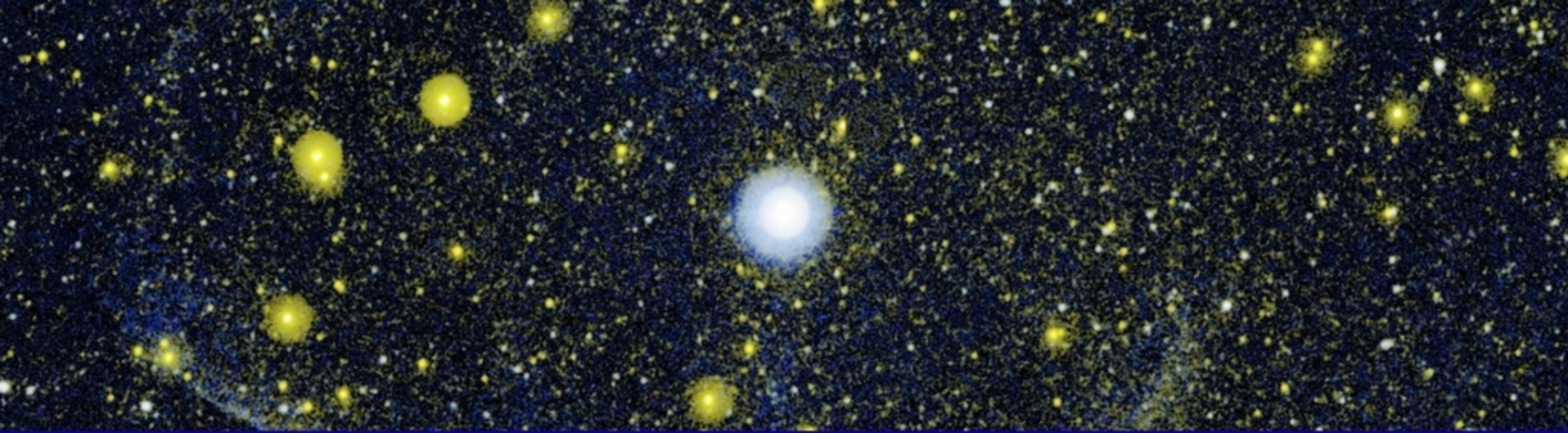
Ideas, Theories, and Equations

**THAT BECOMES THE FOUNDATION
FOR FUTURE IMPROVEMENTS**

HISTORY IS INHERENTLY CONNECTED TO

All Facets of Scientific Inquiry

**BECAUSE IT DOCUMENTS ATTEMPTED,
ACHIEVED, AND ANTICIPATED DISCOVERIES**



Why Choose This Topic?

To explain why the history of physics is important, how history incites new scientific discoveries, and why people should care.

HISTORY INSPIRES NEW DISCOVERIES

through..

MOTIVATION

Historical precedent motivates physicists to challenge common perceptions and popular opinions in search of the truth, such as with Karl Herzfeld, physicist, who described the influence that other physicists had on the direction of his own career, especially in relation to pursuing statistical mechanics.

History involves a collection of ideas, theories, and equations that becomes the foundation for future improvements, such as with Raymond T. Birge, physicist, taking notes during a lecture delivered by Niels Bohr to better understand the material and build upon it.

FOUNDATION


Decisive for me was the presence of Otto Stern. Stern, 4 years older than I, had received his Ph.D. in Breslau under Sackur with a dissertation on non-ideal solutions, and was in Zürich to become a Privatdozent under Einstein.

He had an incredibly penetrating mind and deep understanding of statistical mechanics and thermodynamics, and to the discussions with him I owe my own enlightenment.

P. Ehrenfest also spent 4 weeks in Zürich during that year, and to him also I owe a great deal.

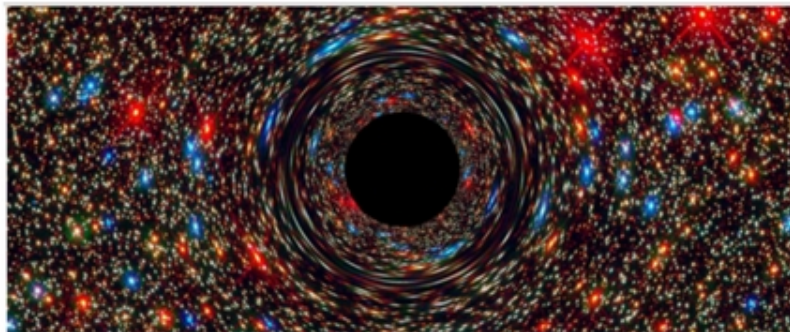


The Online Exhibit



**CONVERT THE PHYSICAL EXHIBIT INTO
AN ONLINE FORMAT TO REACH AND
ENGAGE A LARGER AUDIENCE**

Purpose



A computer simulated image of a supermassive black hole at the core of a galaxy. Source: NASA Image Library.

Why is the History of Physics Important?

Why Should You Care?

In the world of physics, history is often disregarded as extraneous or inconsequential to scientific work. But, history is inherently connected to all facets of scientific inquiry because it documents the desired or anticipated achievements that physicists have attempted, but have yet to realize. Scientific figures throughout history often serve as role models and examples for future physicists as well. Drudging up the history textbooks may seem like an absurd way to advance science, but consider: History involves a collection of ideas, theories, and equations that becomes the foundation for future improvements. So, understanding the history of physics may not be fruitless after all.



Or click on the reasons below to discover why understanding the history of physics could be useful to physicists and future physicists alike:

HISTORY DOCUMENTS HOW IDEAS DEVELOP AND CHANGE OVER TIME

HISTORY ILLUMINATES THE SCIENTIFIC METHOD

HISTORY SHOWS THE HUMANISTIC SIDE OF PHYSICS IN CONTEXT

HISTORY CHRONICLES THE SIGNIFICANT COLLABORATIONS AMONG PHYSICISTS

HISTORY DETAILS HOW PHYSICISTS THINK

HISTORY INSPIRES PEOPLE TO PURSUE PHYSICS AND MAKE NEW DISCOVERIES



History Documents How IDEAS DEVELOP AND CHANGE OVER TIME

Understanding how physics has evolved provides a clearer sense of how knowledge has progressed and how ideas build upon each other.

for example EVEN ARISTOTLE MADE A FEW MISTAKES

Aristotle profoundly shaped medieval scholarship with his use of empirical evidence and reliance on logic. Yet, several of his theories were also wrong: he believed the heavenly bodies were made from a 5th element, women had fewer teeth than men, and eels reproduced by spontaneous generation. These ideas were later disproved, using Aristotle's same methods of empirical evidence and logic.

ferent shape. A second reason for the spherical form of the earth is that when we move north and south the stars change their positions with respect to the horizon, while some even disappear and fresh ones take their place. This shows that the direction of the stars has changed as compared with the observer's horizon; hence, the actual direction of the stars being imperceptibly affected by any motion of the observer on the earth, the horizons at two places, north and south of one another, are in different directions, and the earth is therefore curved. For example, if a star is visible to an observer at A (fig. 12), while to an observer at B it is at the same time invisible, *i.e.* hidden by the earth, the surface of the earth at A must be in a different direction from that at B. Aristotle quotes further, in confirmation of the roundness of the earth, that travellers from the far East and the far West (practically India and Morocco) alike reported the presence of elephants, whence it may be inferred that the two regions in question are not very far apart. He also makes use of some rather obscure arguments of an *a priori* character.

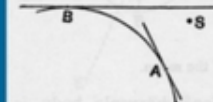


FIG. 12.—The curvature of the earth.

A diagram and explanation depicting one of Aristotle's arguments for why the Earth is round.

Source - The American Institute of Physics, Niels Bohr Library & Archives

binning the efforts and resources of their respective countries would it be possible to establish a laboratory, for research relating to high energy particles, that would rank among the foremost in the world and participate, on behalf of the Europe of tomorrow, in the most advanced work in this field.

When, on 29th September 1954, the Convention for the Establishment of a European Organization for Nuclear Research came into operation, the event, though modestly heralded, opened up far-reaching possibilities.

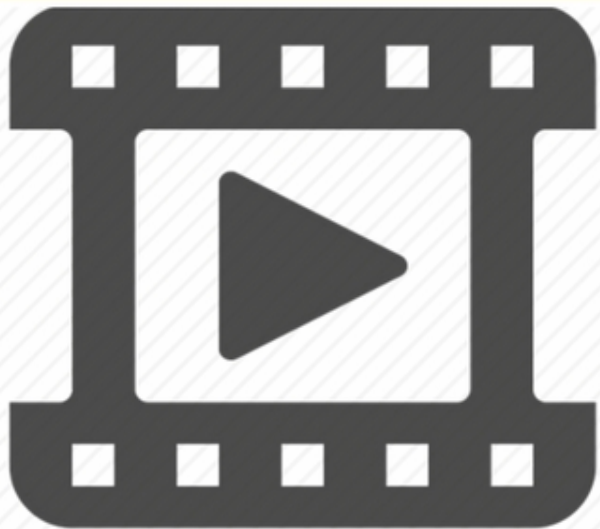
For the first time, twelve European states had by agreement become members of a nuclear research organization, of a purely fundamental and scientific character, whose aim was to extend the frontiers of knowledge.

Supported by the confidence of the twelve Member States, guided by the advice of members of our Scientific Policy Committee, and aided by the goodwill of Switzerland, whose hospitality we enjoy, we have now passed the early stage of tentative effort and overcome our first difficulties, and we believe that we are progressing along the right road.

C.J. Baker



DOCUMENTS, IMAGES, VIDEOS, & MORE





Optimization

- **MARKETING THE EXHIBITS**
- **SOCIAL MEDIA CAMPAIGN**
- **ARTICLES**
- **OUTREACH ACTIVITY:
COLORING PAGES**

THE NIELS BOHR LIBRARY &
ARCHIVES PRESENTS...



Why the History of Physics Matters

AN EXHIBIT

In the Library on the 3rd Floor!

LEARN MORE ABOUT THE
IMPORTANCE OF THE HISTORY OF
PHYSICS, HOW HISTORY INCITES
NEW SCIENTIFIC DISCOVERIES, AND
WHY YOU SHOULD CARE.

Marketing

THE NIELS BOHR LIBRARY & ARCHIVES
PRESENTS...

WHY DOES THE HISTORY OF PHYSICS MATTER?

WHAT: An exhibit

WHERE: The two main display cases in the library,
3rd floor

WHY: To learn more about the importance of the
history of physics, how history incites new scientific
discoveries, and why you should care.

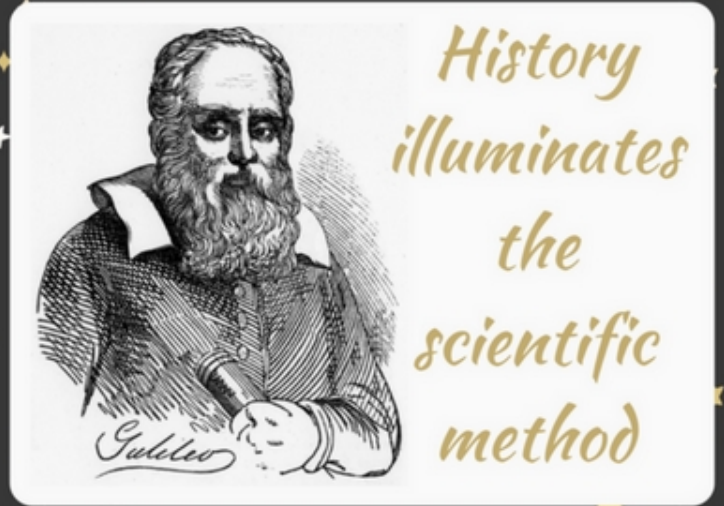
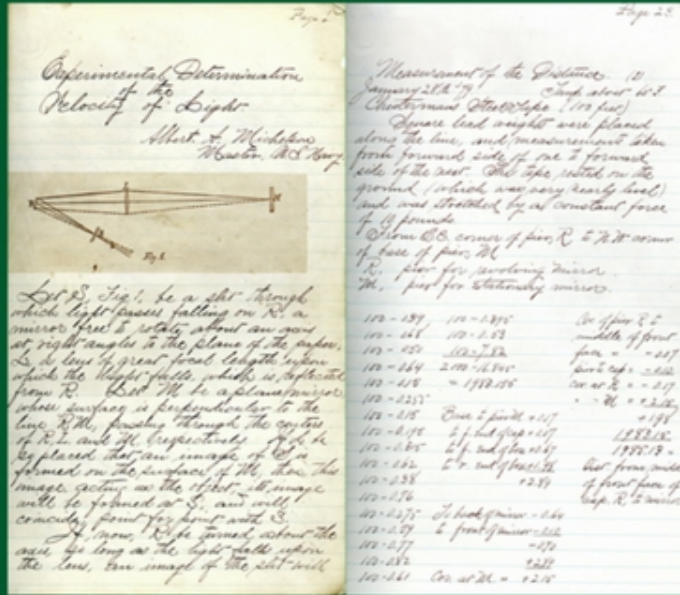
PLEASE VISIT, OPEN 8:30a-5p M-F

SOCIAL MEDIA CAMPAIGN

History inspires people to pursue physics
and make new scientific discoveries...



Selections from Michelson's notebook on the velocity of light



Six Reasons Why the History of Physics Matters



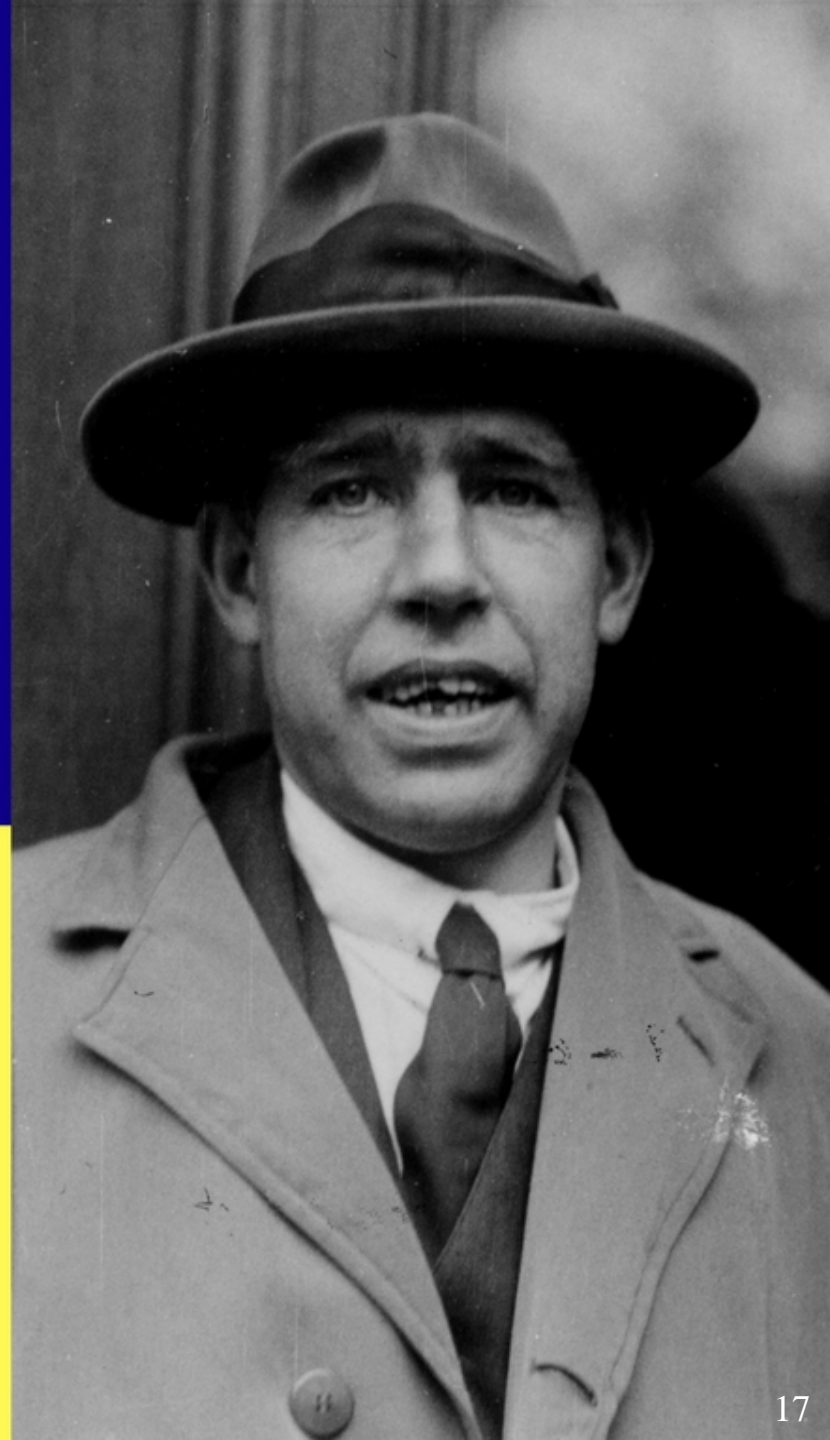
Why the History of Physics Matters:
A Case Study with Abdus Salam



Above the Adversity: Scientists who
Sacrificed for Science

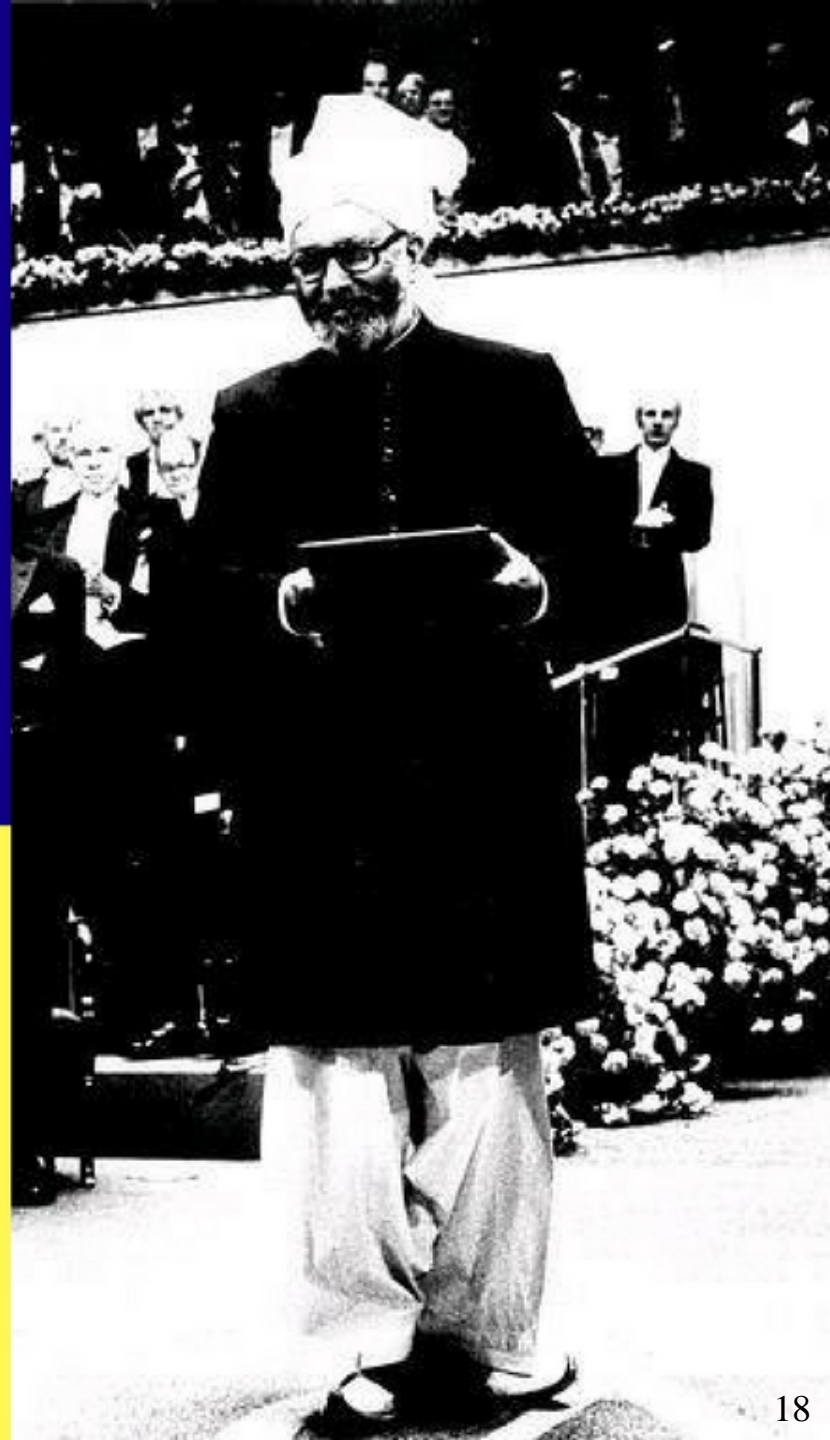
Six Reasons Why the History of Physics Matters

- *Overview*
- *Examples*
- *Persuasion*



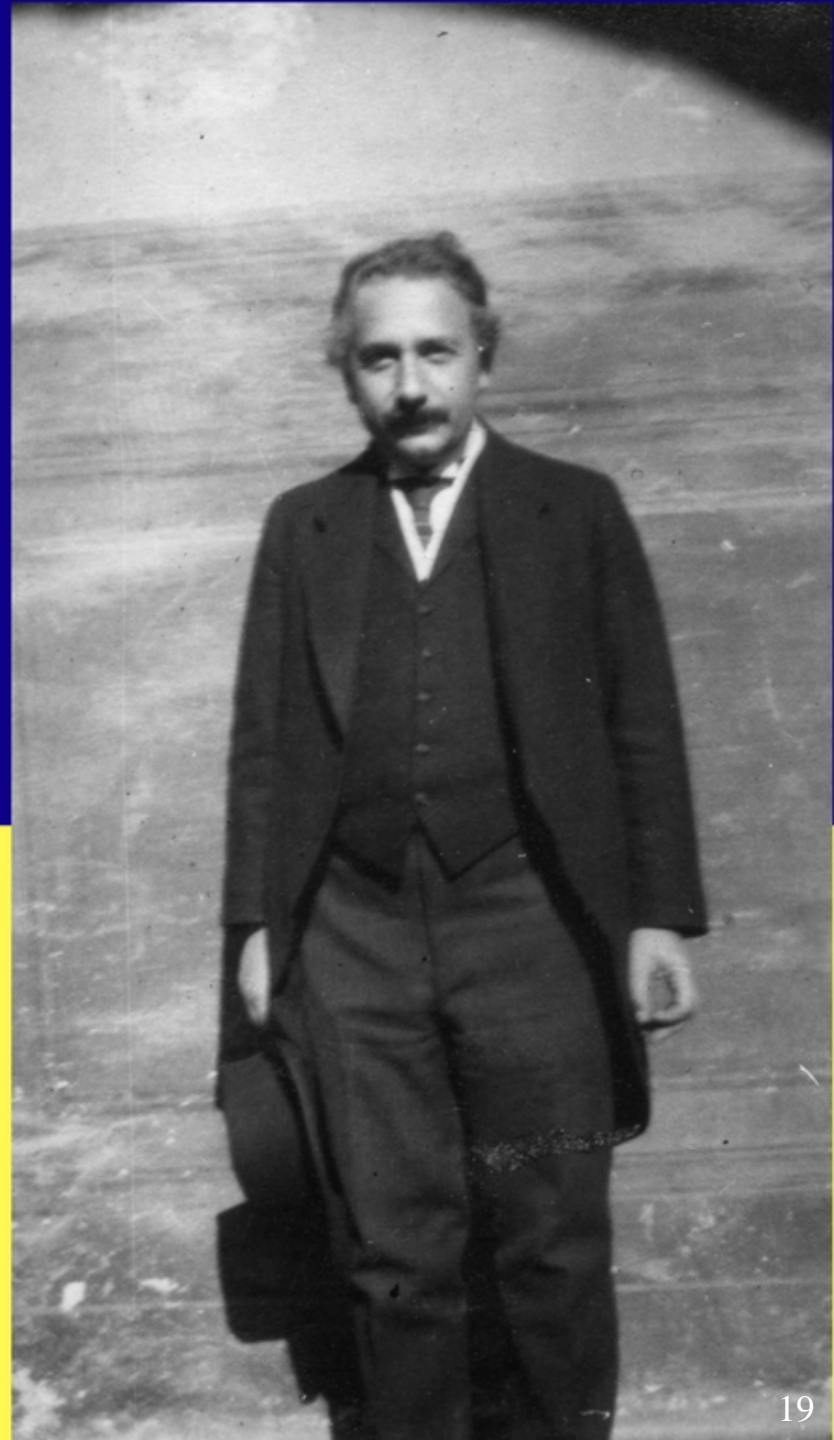
Why the History of Physics Matters: A Case Study with Abdus Salam

- *Achievements*
- *Motivation*
- *Relation to history*



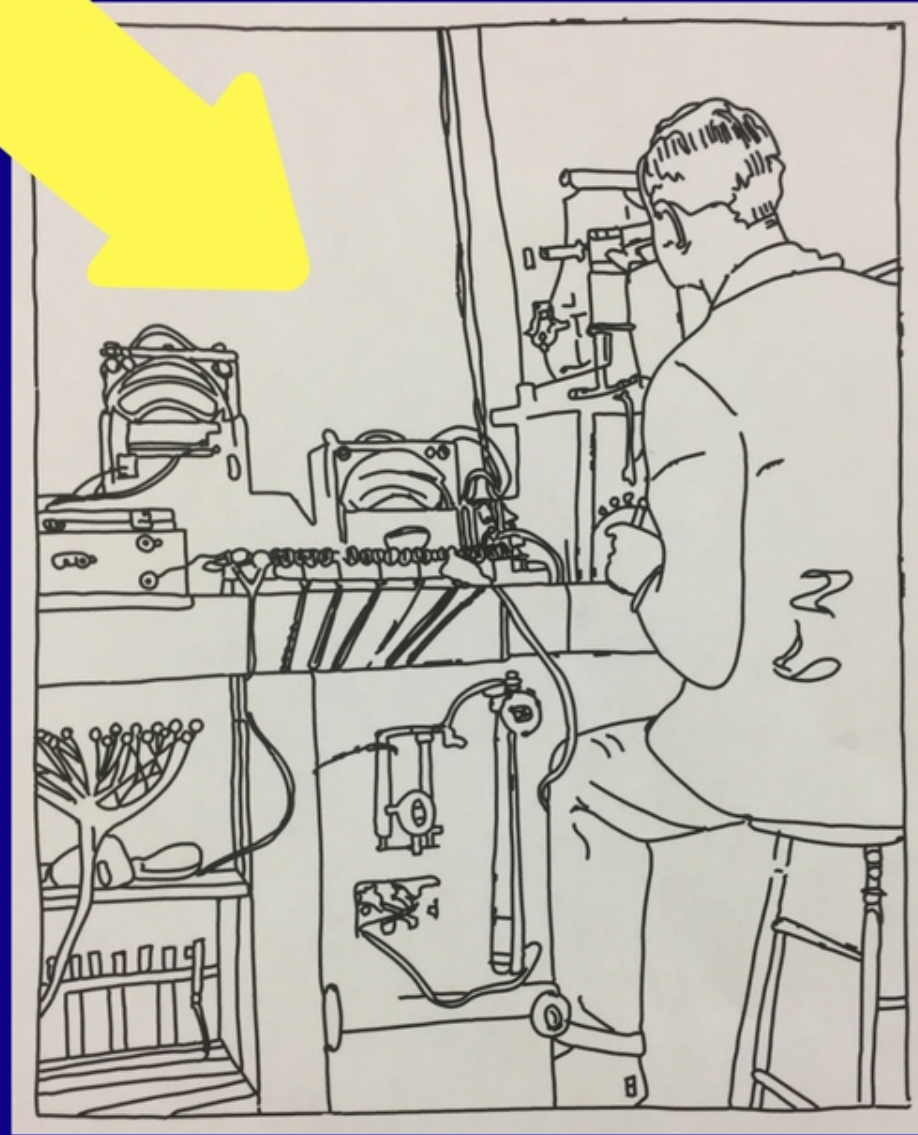
Above the Adversity: Scientists who Sacrificed for Science

- Galileo
- Bohr
- Curie
- Einstein
- Oppenheimer



Coloring Pages

UTILIZING ARCHIVAL IMAGES
FOR AN OUTREACH ACTIVITY





www.spsnational.org/programs/history



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The SPS Observer



Why Care?

THE HISTORY OF PHYSICS IS A RECORD OF CIVILIZATION'S PAST ACHIEVEMENTS, NEW KNOWLEDGE, AND STILL UNANSWERED QUESTIONS; SUCH A RECORD IS WORTH KNOWING.



*thank
you*

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Everyone at the Niels Bohr Library & Archives!



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