



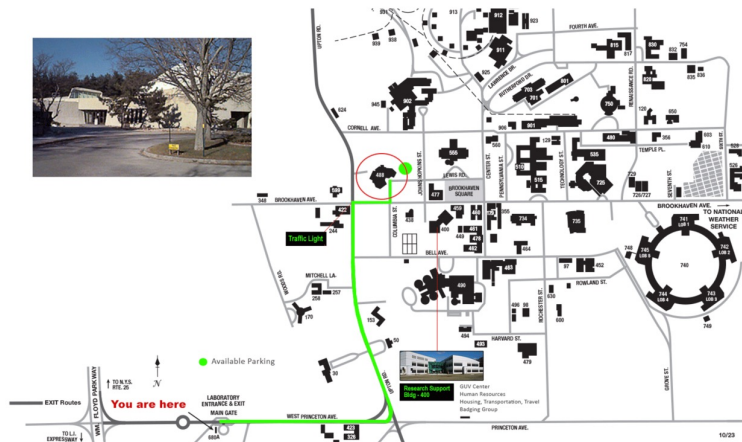
# Welcome to Decades of Discovery

November 22, 2024



# Welcome to BNL!

Please stay in/around Berkner Hall while you are onsite today!



Please take note of the emergency exits in this auditorium

## Our Values at BNL:

At Brookhaven Lab, our vision is to accelerate pathways to scientific discovery and technological innovation that transform the world.

Achieving this vision requires simultaneous excellence in science, laboratory operations, and service to the community. We work to produce positive impacts for the region, the nation, and the world.

We are committed to treating all in an ethical manner—with [respect](#) through common courtesy, civility, and effective communication. We expect to be treated that way in return.

We strive to maintain a [diverse, equitable, inclusive, and accessible](#) work environment in which all in the Lab community—including staff, guests, facility users, visitors, students, educators, and contractors—are valued and empowered to work to their fullest potential.

We do not tolerate any form of [harassment](#), [discrimination](#), or [retaliation](#) against or by members of the Lab community while working at the Lab site or off, and when representing Brookhaven at meetings, workshops, and other events.

[BNL Anti-Harassment Policy](#)  
[Our Values and Expected Conduct](#)



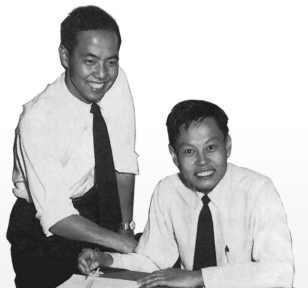
# The Nobel Prize

Brookhaven National Laboratory is home to world-class research facilities and scientific departments which attract resident and visiting scientists in many fields. This outstanding mix of machine- and mind-power has on seven occasions produced research deemed worthy of the greatest honor in science: the Nobel Prize.

## 1957

### Nobel Prize in Physics

In 1957, T. D. Lee (left), of Columbia University, and C. N. Yang, then of Brookhaven, interpreted results of particle decay experiments at Brookhaven's Cosmotron particle accelerator. They discovered particles which had the same masses, lifetimes and scattering behaviors, but which decayed differently, proving that the fundamental and supposedly absolute law of parity conservation can be violated.



## 1976

### Nobel Prize in Physics

The 1976 Nobel Prize in physics was shared by a Massachusetts Institute of Technology researcher who used Brookhaven's Alternating Gradient Synchrotron to discover a new particle and confirm the existence of the charmed quark. Samuel C.C. Ting was credited for finding what he called the "J" particle, the same particle as the "psi" found at nearly the same time by Burton Richter.



## 1980

### Nobel Prize in Physics

The 1980 physics Nobel was awarded to James W. Cronin (right) and Val L. Fitch, both then of Princeton University, whose 1963 experiment at Brookhaven's Alternating Gradient Synchrotron discovered a flaw in physics' central belief that the universe is symmetrical. They discovered the phenomenon known as "CP violation".



## 1988

### Nobel Prize in Physics

Leon Lederman, Melvin Schwartz and Jack Steinberger received the 1988 Physics prize for their 1962 discovery of the muon-neutrino. At the time, only the electron-neutrino was known. Using Brookhaven's Alternating Gradient Synchrotron, they detected a new type of the ghostlike particles that pass through everything.



## 2002

### Nobel Prize in Physics

Raymond Davis Jr., a chemist at Brookhaven National Laboratory, won the 2002 Nobel Prize in Physics for detecting solar neutrinos, ghostlike particles produced in the nuclear reactions that power the sun. Davis shared the prize with Masatoshi Koshiba of Japan, and Riccardo Giacconi of the U.S.



## 2003

### Nobel Prize in Chemistry

Roderick MacKinnon, M.D., a visiting researcher at Brookhaven National Laboratory, won one half of the 2003 Nobel Prize in Chemistry for work explaining how a class of proteins helps to generate nerve impulses – the electrical activity that underlies all movement, sensation, and perhaps even thought.



## 2009

### Nobel Prize in Chemistry

Venkatesan Ramakrishnan, of the Medical Research Council Laboratory of Molecular Biology in Cambridge, UK, a former employee in Brookhaven's biology department, and Thomas A. Steitz of Yale University shared the prize with Ada E. Yonath of the Weizmann Institute of Science for studying the structure and function of the ribosome.





# The Nobel Prize

Brookhaven National Laboratory is home to world-class research facilities and scientific departments which attract resident and visiting scientists in many fields. This outstanding mix of machine- and mind-power has on seven occasions produced research deemed worthy of the greatest honor in science: the Nobel Prize.

Today we celebrate the two Nobel-Prize winning discoveries that were made 50 and 60 years ago!

1976

## Nobel Prize in Physics

The 1976 Nobel Prize in physics was shared by a Massachusetts Institute of Technology researcher who used Brookhaven's Alternating Gradient Synchrotron to discover a new particle and confirm the existence of the charmed quark. Samuel C.C. Ting was credited for finding what he called the "J" particle, the same particle as the "psi" found at nearly the same time by Burton Richter.

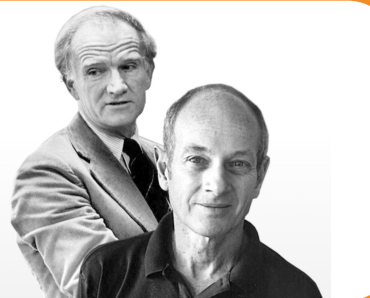


Discovery of the J/psi particle in 1974

1980

## Nobel Prize in Physics

The 1980 physics Nobel was awarded to James W. Cronin (right) and Val L. Fitch, both then of Princeton University, whose 1963 experiment at Brookhaven's Alternating Gradient Synchrotron discovered a flaw in physics' central belief that the universe is symmetrical. They discovered the phenomenon known as "CP violation".


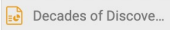


Discovery of CP violation in 1964



# Agenda


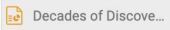
<https://indico.fnal.gov/event/66742/>

1:00 PM	→ 1:10 PM	<b>Introduction and Welcome to BNL</b> Speaker: Elizabeth Worcester (BNL)
1:10 PM	→ 1:45 PM	<b>History of the Discovery of the J Particle at BNL</b> Speaker: Samuel Ting (MIT)
1:45 PM	→ 2:20 PM	<b>A history of the Psi and its offspring</b> Speaker: Martin Breidenbach (SLAC) 
2:20 PM	→ 2:55 PM	<b>History of CP Violation Discovery</b> Speaker: Ed Blucher (Chicago)
2:55 PM	→ 3:20 PM	<b>The Intensity of Astonishment: Celebrating Two BNL Discoveries from a Historian's View</b> Speaker: Bob Crease (Stony Brook University) 
3:20 PM	→ 3:30 PM	<b>Group Photo</b>
3:30 PM	→ 4:00 PM	Coffee Break

3:30 PM	→ 4:00 PM	Coffee Break
4:00 PM	→ 4:20 PM	<b>Discoveries at the Cosmotron and Alternating Gradient Synchrotron</b> Speaker: Nicholas Samios (BNL)
4:20 PM	→ 4:35 PM	<b>Current research at BNL: J/psi at RHIC</b> Speaker: Rongrong Ma (Brookhaven National Laboratory)
4:35 PM	→ 4:50 PM	<b>Current research at BNL: J/psi in LHC Run 3</b> Speaker: Haider Abidi
4:50 PM	→ 5:05 PM	<b>Current research at BNL: CP Violation at Belle-II</b> Speaker: Angelo Di Canto (BNL)
5:05 PM	→ 5:20 PM	<b>Current research at BNL: CP Violation at DUNE</b> Speaker: Julia Gehrelein (Colorado State University)
5:20 PM	→ 5:50 PM	<b>How the J/psi and CPV Discoveries Shaped Particle Physics</b> Speaker: JoAnne Hewett (Brookhaven National Lab)
5:50 PM	→ 6:00 PM	<b>Discussion</b>
6:00 PM	→ 7:00 PM	Reception

# Agenda

<https://indico.fnal.gov/event/66742/>

1:00 PM	→ 1:10 PM	<b>Introduction and Welcome to BNL</b> Speaker: Elizabeth Worcester (BNL)
1:10 PM	→ 1:45 PM	<b>History of the Discovery of the J Particle at BNL</b> Speaker: Samuel Ting (MIT)
1:45 PM	→ 2:20 PM	<b>A history of the Psi and its offspring</b> Speaker: Martin Breidenbach (SLAC) 
2:20 PM	→ 2:55 PM	<b>History of CP Violation Discovery</b> Speaker: Ed Blucher (Chicago)
2:55 PM	→ 3:20 PM	<b>The Intensity of Astonishment: Celebrating Two BNL Discoveries from a Historian's View</b> Speaker: Bob Crease (Stony Brook University) 
3:20 PM	→ 3:30 PM	<b>Group Photo</b>
3:30 PM	→ 4:00 PM	Coffee Break

3:30 PM	→ 4:00 PM	Coffee Break
4:00 PM	→ 4:20 PM	<b>Discoveries at the Cosmotron and Alternating Gradient Synchrotron</b> Speaker: Nicholas Samios (BNL)
4:20 PM	→ 4:35 PM	<b>Current research at BNL: J/psi at RHIC</b> Speaker: Rongrong Ma (Brookhaven National Laboratory)
4:35 PM	→ 4:50 PM	<b>Current research at BNL: J/psi in LHC Run 3</b> Speaker: Haider Abidi
4:50 PM	→ 5:05 PM	<b>Current research at BNL: CP Violation at Belle-II</b> Speaker: Angelo Di Canto (BNL)
5:05 PM	→ 5:20 PM	<b>Current research at BNL: CP Violation at DUNE</b> Speaker: Julia Gehrelain (Colorado State University)
5:20 PM	→ 5:50 PM	<b>How the J/psi and CPV Discoveries Shaped Particle Physics</b> Speaker: JoAnne Hewett (Brookhaven National Lab)
5:50 PM	→ 6:00 PM	<b>Discussion</b>
6:00 PM	→ 7:00 PM	Reception

Current & future research at BNL

# Agenda

<https://indico.fnal.gov/event/66742/>

**1:00 PM** → 1:10 PM **Introduction and Welcome to BNL**

Speaker: Elizabeth Worcester (BNL)

**1:10 PM** → 1:45 PM **History of the Discovery of the J Particle at BNL**

Speaker: Samuel Ting (MIT)

**1:45 PM** → 2:20 PM **A history of the Psi and its offspring**

Speaker: Martin Breidenbach (SLAC)


 Psi BNL.pptx.pdf

**2:20 PM** → 2:55 PM **History of CP Violation Discovery**

Speaker: Ed Blucher (Chicago)

**2:55 PM** → 3:20 PM **The Intensity of Astonishment: Celebrating Two BNL Discoveries from a Historian's View**

Speaker: Bob Crease (Stony Brook University)

 Decades of Discove...

**3:20 PM** → 3:30 PM **Group Photo**

**3:30 PM** → 4:00 PM

Coffee Break

**3:30 PM** → 4:00 PM

Coffee Break

**4:00 PM** → 4:20 PM **Discoveries at the Cosmotron and Alternating Gradient Synchrotron**

Speaker: Nicholas Samios (BNL)

**4:20 PM** → 4:35 PM **Current research at BNL: J/psi at RHIC**

Speaker: Rongrong Ma (Brookhaven National Laboratory)

**4:35 PM** → 4:50 PM **Current research at BNL: J/psi in LHC Run 3**

Speaker: Haider Abidi

**4:50 PM** → 5:05 PM **Current research at BNL: CP Violation at Belle-II**

Speaker: Angelo Di Canto (BNL)

**5:05 PM** → 5:20 PM **Current research at BNL: CP Violation at DUNE**

Speaker: Julia Gehrelein (Colorado State University)

**5:20 PM** → 5:50 PM **How the J/psi and CPV Discoveries Shaped Particle Physics**

Speaker: JoAnne Hewett (Brookhaven National Lab)

**5:50 PM** → 6:00 PM **Discussion**

**6:00 PM** → 7:00 PM

Reception

# Agenda

<https://indico.fnal.gov/event/66742/>

1:00 PM	→ 1:10 PM	<b>Introduction and Welcome to BNL</b> Speaker: Elizabeth Worcester (BNL)
1:10 PM	→ 1:45 PM	<b>History of the Discovery of the J Particle at BNL</b> Speaker: Samuel Ting (MIT)
1:45 PM	→ 2:20 PM	<b>A history of the Psi and its offspring</b> Speaker: Martin Breidenbach (SLAC) <a href="#">Psi BNL.pptx.pdf</a>
2:20 PM	→ 2:55 PM	<b>History of CP Violation Discovery</b> Speaker: Ed Blucher (Chicago)
2:55 PM	→ 3:20 PM	<b>The Intensity of Astonishment: Celebrating Two BNL Discoveries from a Historian's View</b> Speaker: Bob Crease (Stony Brook University) <a href="#">Decades of Discove...</a>
3:20 PM	→ 3:30 PM	<b>Group Photo</b>
3:30 PM	→ 4:00 PM	<b>Coffee Break</b>

The glasses for the champagne toast are our gift to you – please take yours home as a souvenir!

3:30 PM	→ 4:00 PM	
4:00 PM	→ 4:20 PM	<b>Discoveries</b> Speaker: Nich
4:20 PM	→ 4:35 PM	<b>Current rese</b> Speaker: Rong
4:35 PM	→ 4:50 PM	<b>Current rese</b> Speaker: Haid
4:50 PM	→ 5:05 PM	<b>Current rese</b> Speaker: Ang
5:05 PM	→ 5:20 PM	<b>Current rese</b> Speaker: Julia
5:20 PM	→ 5:50 PM	<b>How the J/p</b> Speaker: JoAn
5:50 PM	→ 6:00 PM	<b>Discussion</b>
6:00 PM	→ 7:00 PM	<b>Reception</b>

