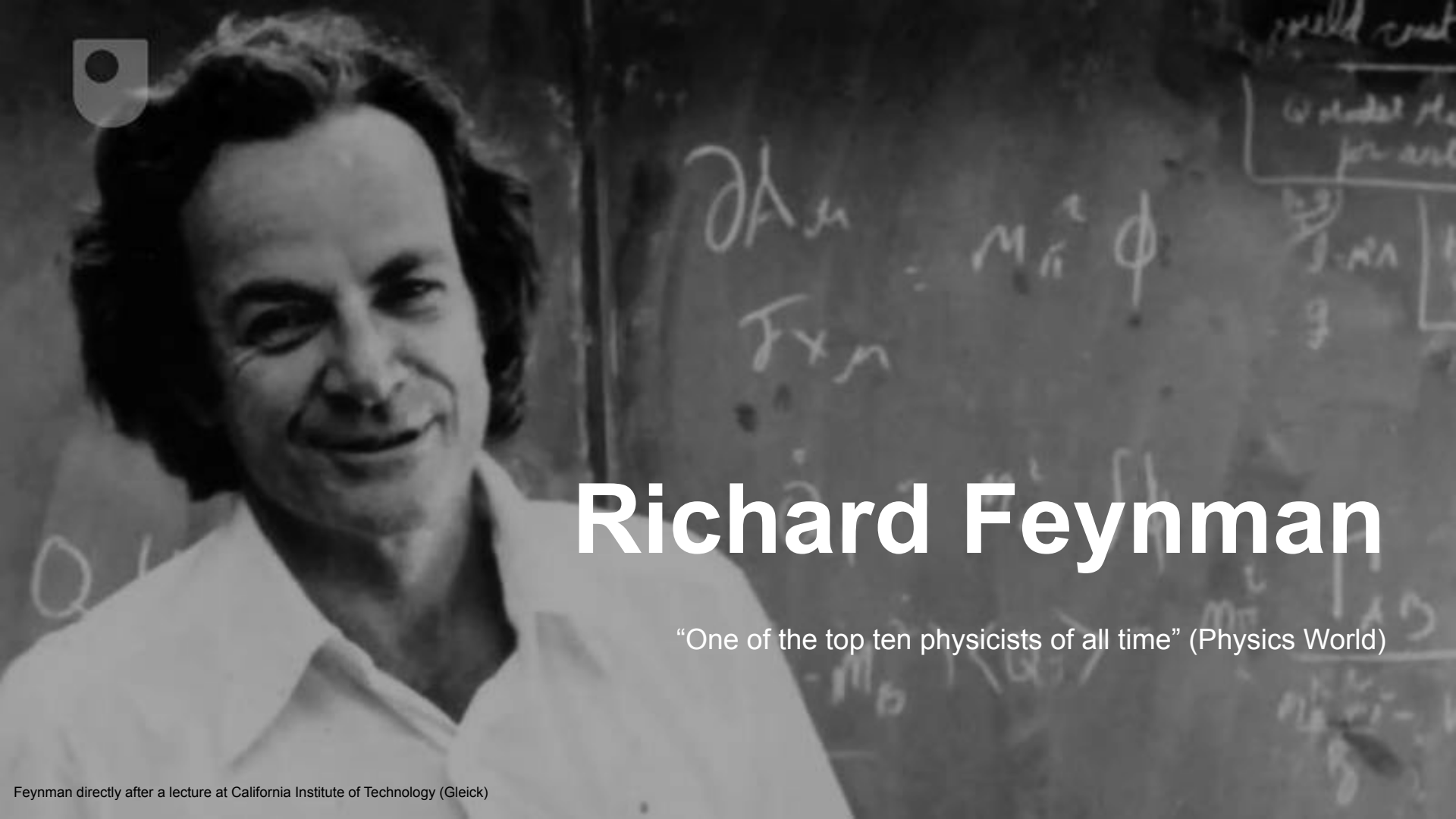


# Richard Feynman

"One of the top ten physicists of all time" (Physics World)

Feynman directly after a lecture at California Institute of Technology (Gleick)

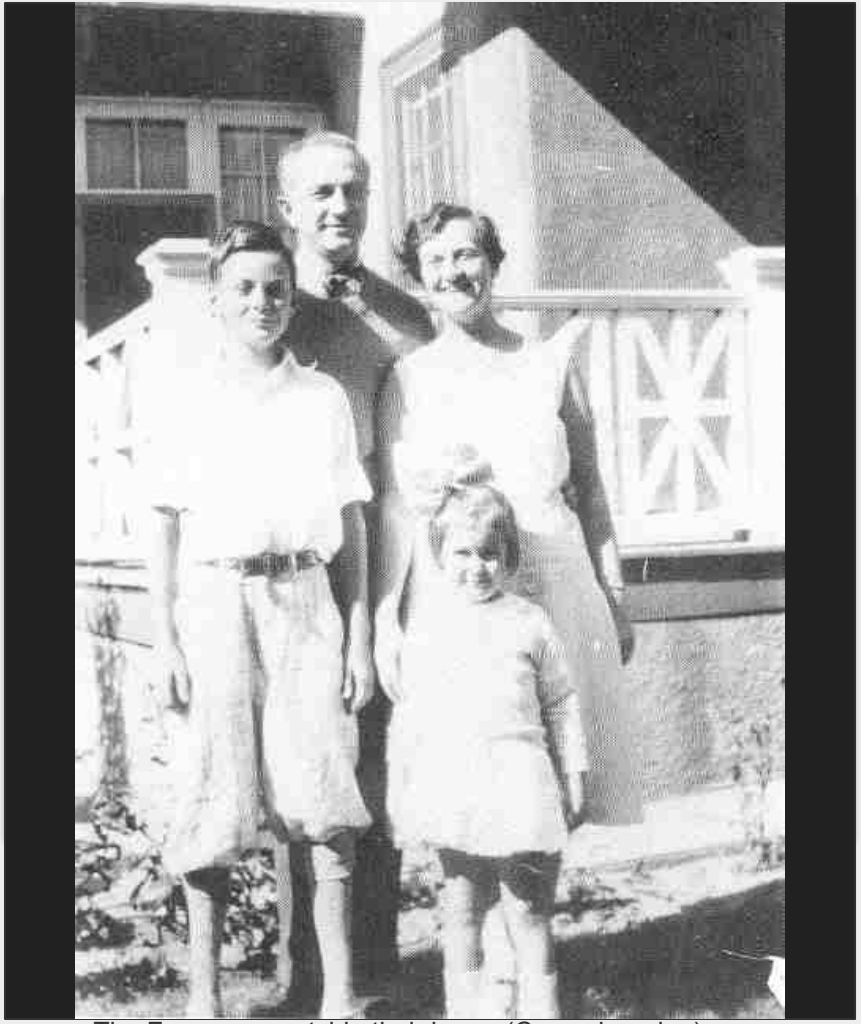
# Richard Phillips Feynman

- Born May 11, 1918 in Queens, New York City
- Known primarily for his contributions to quantum physics and quantum electrodynamics
- Passed away in Los Angeles, California on February 15, 1988

Richard Feynman's Los Alamos Research Lab ID (Roseland)

# Family Background

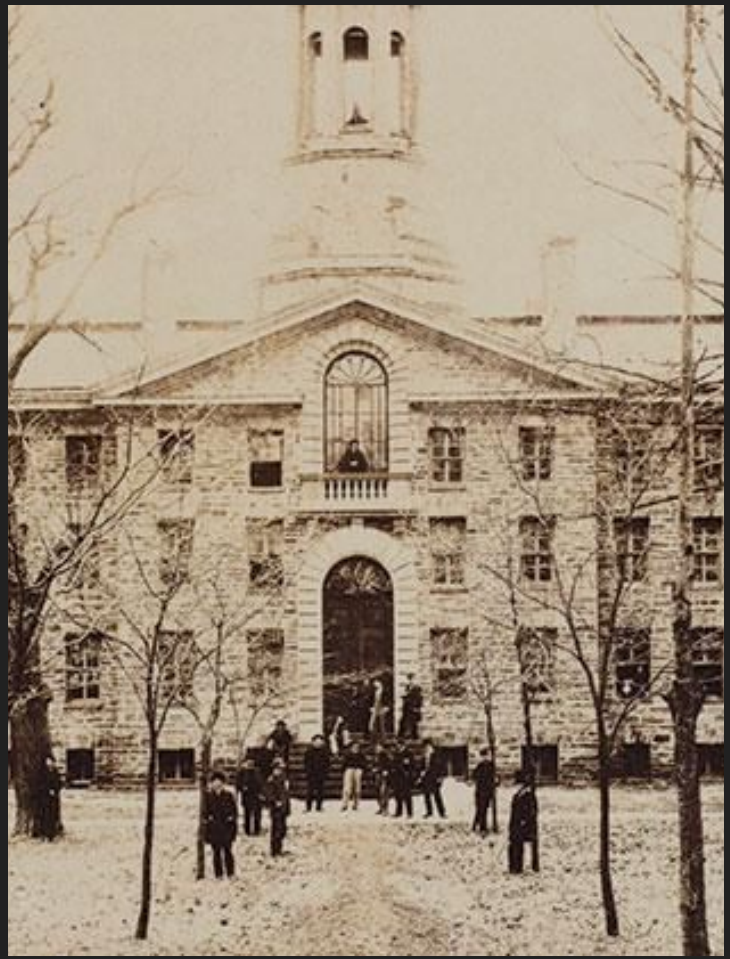
- Both of his parents were born into Jewish families
- His father, Melville Arthur Feynman was a sales manager, but had a talent for science and inspired Richard to pursue physics
- His mother, Lucille née Phillips, was a homemaker
- He was very close with his younger sister Joan, despite being separated by 9 years



The Feynmans outside their home (Cosmolearning)

# Educational Background

- Taught himself  trigonometry, advanced algebra, infinite series, analytic geometry, and both differential and integral calculus at 15
- Earned a bachelor’s degree from MIT in 1939
- Studied mathematics and physics at Princeton University for graduate studies



Princeton University, 1870 (Old North)

# Educational Background

- Applied the *Principle of Least Action* to quantum physics to support a new interpretation of electrodynamics
- He received a PhD in 1942 for his thesis with his advisor John Wheeler
- He conducted a seminar for Einstein, Pauli and Neumann, who saw that Feynman's work could apply to their own

**John Wheeler: 1911-2008** (Durrani)

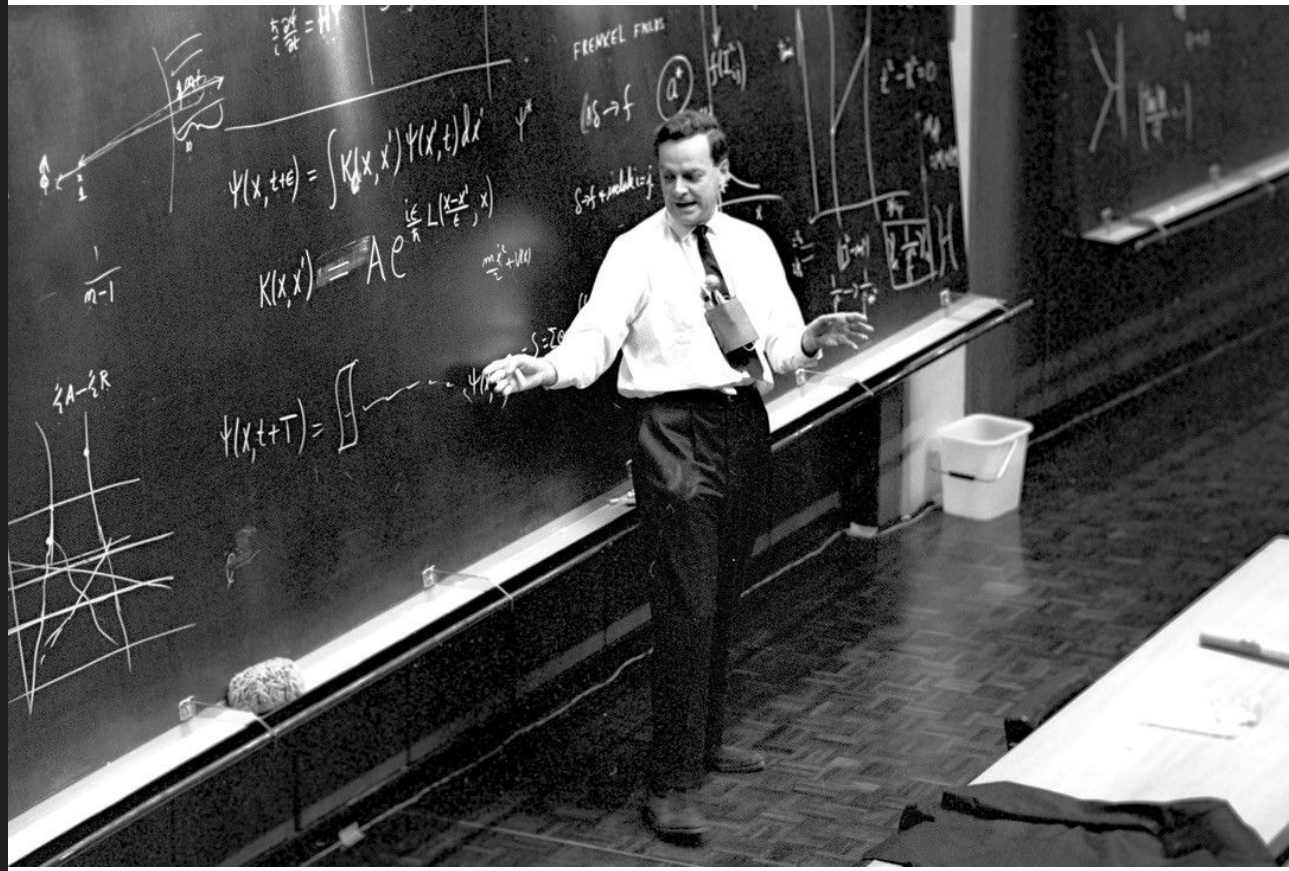
## Career Path

- Conducted research in the secret Los Alamos Lab in New Mexico
- Became the youngest group leader in Hans Bethe’s “Theoretical Division”
- Witnessed the Trinity nuclear test
- Studied Quantum Electrodynamics (QED) at Cornell

The Manhattan Project team and prototype. Feynman is 7th from the right. (Rajaniemi)

## Career Path

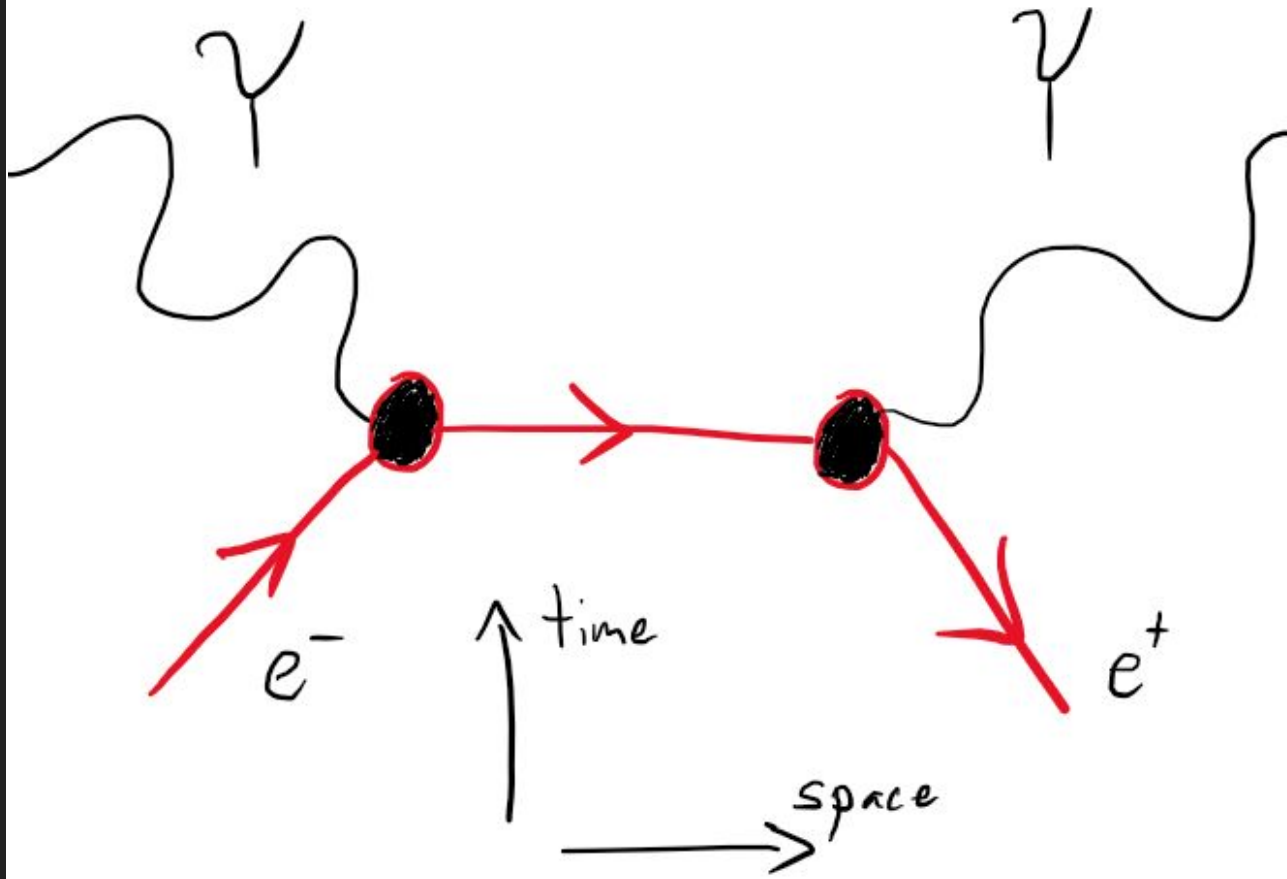
- Studied Quantum Electrodynamics (QED) at Cornell University as an associate professor (1945-1950)
- Became a professor at the California Institute of Technology, where he delivered his renowned *Feynman Lectures on Physics*




Feynman's lecture: *The Character of Physical Law* for the prestigious Messenger Lecture Series in 1964 (Veisdal)

## Contributions

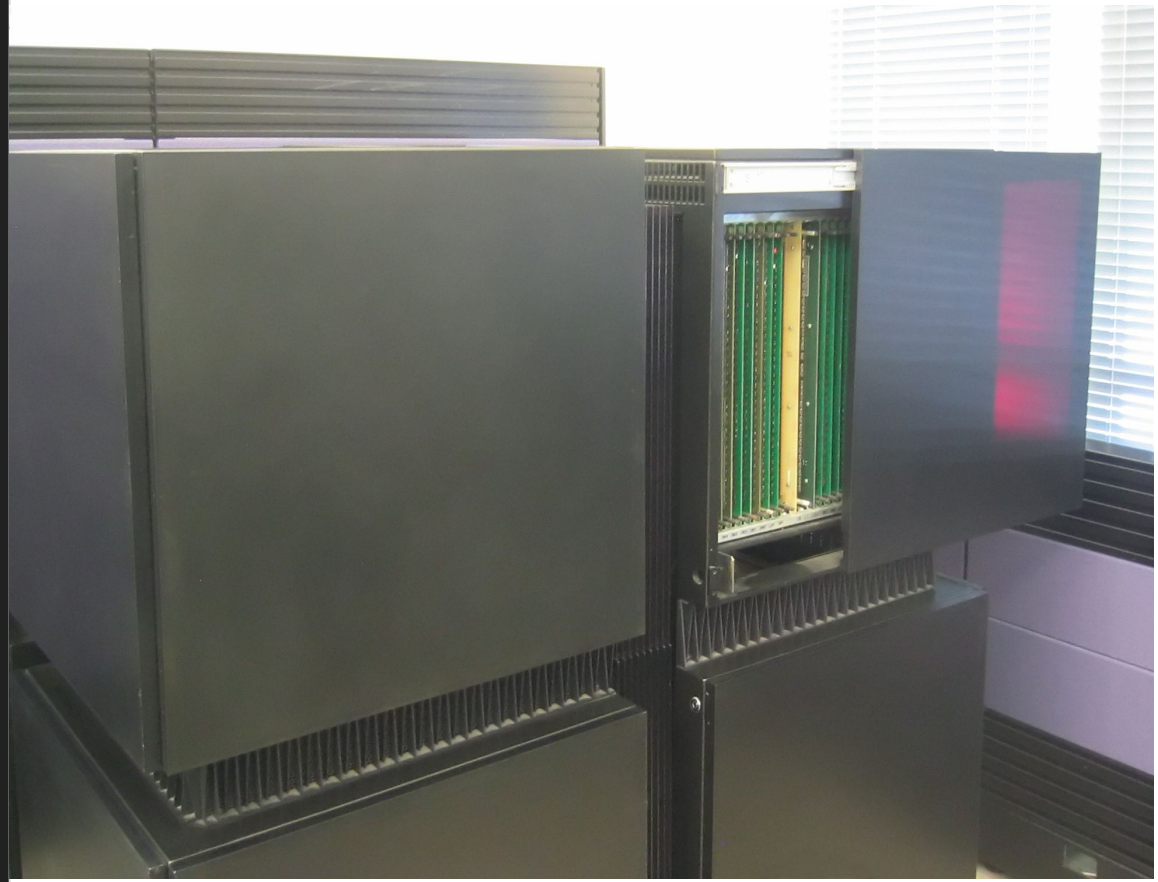
- The path integral formulation of quantum electrodynamics
- Feynman Diagrams and the behaviour of subatomic particles colliding




Feynman diagram of electron/positron annihilation in spacetime. There is one electron (e−) and one positron (e+) and in the final state there are two photons (γ)

# Contributions

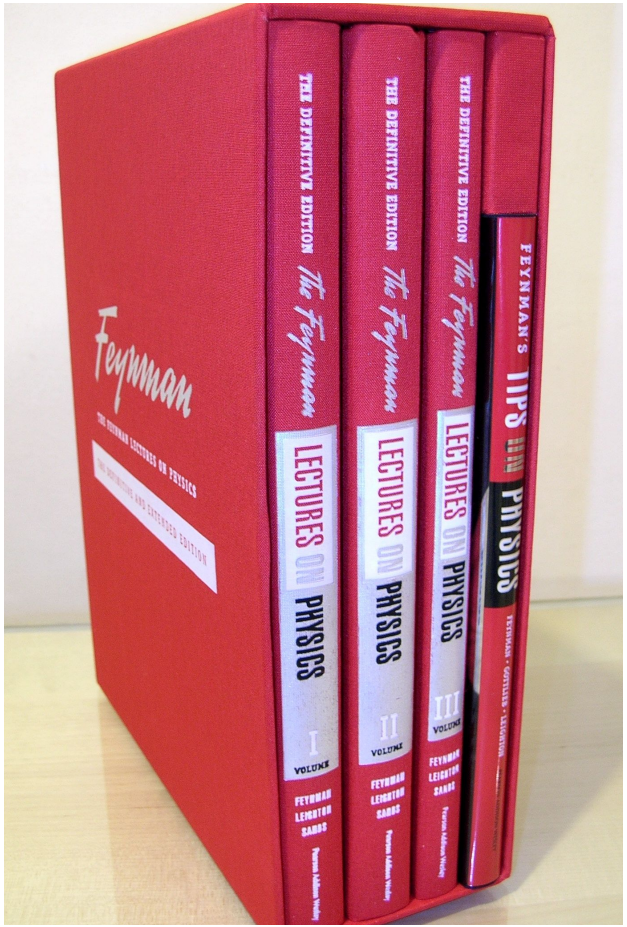
- Quantum chromodynamics and the electroweak force
- He built the first parallel supercomputers and quantum computers
- Approximating previously unsolvable series with path integrals



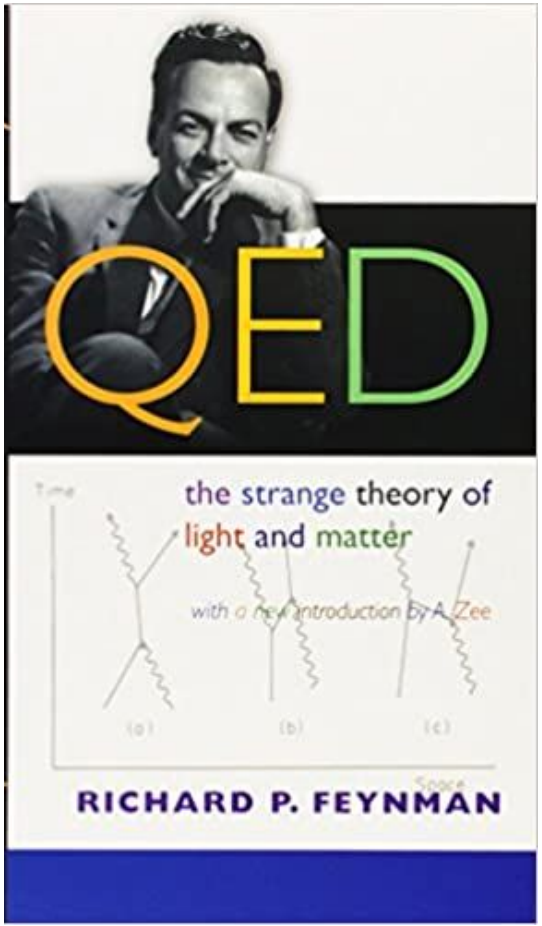
Thinking Machines CM-2 at the Computer History Museum in Mountain View, California.
Retrieved from
http://gallery.donarmstrong.com/2005/08_august/computer_museum_20050813/010_thinking_machines_20050813.jpg

# Literature

- The Feynman Lectures on Physics
- The Character of Physical Law
- QED: The Strange Theory of Light and Matter
- Statistical Mechanics
- Lectures on Gravitation
- The Feynman Lectures on Computation



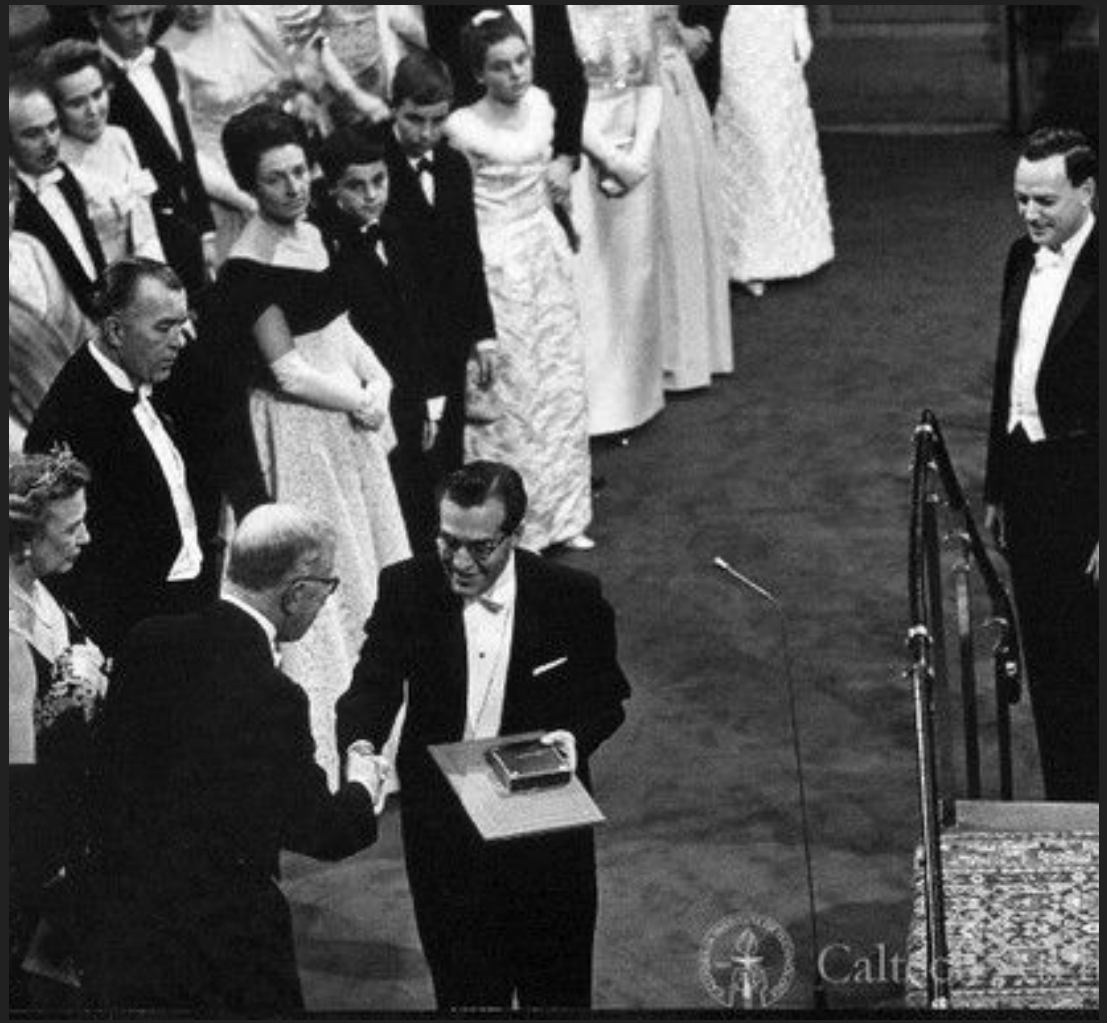

A compilation of Feynman's Lectures on Physics (Feynman)




A compilation of Feynman's lectures on quantum electrodynamics (Feynman)

## Awards

- Albert Einstein Award (1954)
- Ernest Orlando Lawrence Award (1962)
- Nobel Prize in Physics (1965)
- Oersted Award (1972)
- National Medal of Science (1979)
- Elected a Foreign Member of the Royal Society (1965)



Feynman waiting to receive his Nobel Prize in 1965 (Feynman)

Thank you!

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