Albert Einstein

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Research Interests

Theoretical physics, general relativity, quantum mechanics, statistical mechanics, unified field theory

Education

ETH Zurich (Swiss Federal Polytechnic) — Zurich, Switzerland
Ph.D. in Physics — 1900–1905

ETH Zurich (Swiss Federal Polytechnic) — Zurich, Switzerland
Diploma in Mathematics and Physics — 1896–1900

Aargau Cantonal School — Aarau, Switzerland
Secondary Education Certificate — 1895–1896

Experience

Institute for Advanced Study — Princeton, NJ, USA
Professor of Theoretical Physics — 1933–1955

- Conducted research on unified field theory and cosmology
- Mentored doctoral and post-doctoral researchers
- Published 33 papers during tenure

University of Berlin — Berlin, Germany
Professor of Theoretical Physics — 1914–1933

- Developed foundations of general relativity theory
- Elected to Prussian Academy of Sciences
- Led Kaiser Wilhelm Institute for Physics

Swiss Patent Office — Bern, Switzerland
Technical Expert, Second Class — 1902–1909

- Published "Annus Mirabilis" papers (1905)
- Developed special relativity and mass-energy equivalence
- Contributed to quantum theory foundations

Honors & Awards

- Nobel Prize in Physics, *Royal Swedish Academy of Sciences* 1921
- Copley Medal, *Royal Society of London* 1925
- Max Planck Medal, *German Physical Society* 1929
- Franklin Medal, *Franklin Institute* 1935
- Foreign Member, *Royal Society of London* 1921
- Member, *National Academy of Sciences* 1922

Publications

[1] **Albert Einstein**, Boris Podolsky, and Nathan Rosen. "Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?" In: *Physical Review* 47.10 (1935). EPR paradox paper, pp. 777–780.

[2] **Albert Einstein**. "Kosmologische Betrachtungen zur allgemeinen Relativitätstheorie". In: *Sitzungsberichte der Königlich Preußischen Akademie der Wissenschaften* (1917). Introduction of cosmological constant, pp. 142–152.

[3] **Albert Einstein**. "Die Grundlage der allgemeinen Relativitätstheorie". In: *Annalen der Physik* 49.7 (1916). General theory of relativity, pp. 769–822.

[4] **Albert Einstein**. "Ist die Trägheit eines Körpers von seinem Energieinhalt abhängig?" In: *Annalen der Physik* 18.13 (1905). Mass-energy equivalence, $E = mc^2$, pp. 639–641.

[5] **Albert Einstein**. "Über einen die Erzeugung und Verwandlung des Lichtes betreffenden heuristischen Gesichtspunkt". In: *Annalen der Physik* 17.6 (1905). Nobel Prize paper on photoelectric effect, pp. 132–148.

[6] **Albert Einstein**. "Zur Elektrodynamik bewegter Körper". In: *Annalen der Physik* 17.10 (1905). Special theory of relativity, pp. 891–921.

Technical Skills

Theoretical Physics: Relativity Theory, Quantum Mechanics, Statistical Mechanics, Thermodynamics
Mathematics: Differential Geometry, Non-Euclidean Geometry, Tensor Analysis, Differential Equations
Programming Languages: Fortran, Assembly (theoretical calculations)
Mathematical Tools: Analytical mechanics, Variational calculus, Complex analysis
Languages: German (native), English (fluent), French (working proficiency), Italian (basic)

Software

- `relativity-simulator`, *Personal project* 1920–1930
- `quantum-probability`, *Collaborative research* 1924–1935

Talks & Presentations

- The Evolution of Physics, *University of Oxford* 1933
- The Unified Field Theory, *California Institute of Technology* 1931
- The Theory of Relativity, *Columbia University* 1921
- Space, Time and Gravitation, *King's College London* 1921
- The Meaning of Relativity, *Princeton University* 1921

Teaching

Course Instructor

- Advanced Seminar in Theoretical Physics, *Institute for Advanced Study* 1933–1955
- Graduate Lectures in Relativity Theory, *University of Berlin* 1914–1933

Guest Lectures

- Lectures on Molecular Physics, *University of Zurich* 1909–1911

Mentoring

- Nathan Rosen, *PhD advisor* 1932–1935
- Peter Bergmann, *PhD advisor* 1933–1936
- Bruria Kaufman, *PhD co-advisor* 1948–1951
- Leopold Infeld, *Postdoc* 1936–1938
- Valentine Bargmann, *PhD committee* 1936–1938
- John Wheeler, *PhD committee* 1933–1935
- Abraham Pais, *Visiting researcher* 1946–1947

Service

Conference Organization

- Solvay Conference on Physics, *Organizing Committee* 1927, 1930
- International Congress of Mathematicians, *Advisory Board* 1928
- Prussian Academy Physics Colloquium, *Organizing Committee* 1920–1933

Peer Review

- Annalen der Physik: 1905–1933
- Physical Review: 1935–1955
- Proceedings of the Royal Society: 1920–1950
- Zeitschrift für Physik: 1920–1933

Departmental & University Service

- Board of Governors, *Hebrew University of Jerusalem* 1925–1955
- Faculty Senate, *Institute for Advanced Study* 1933–1955
- Academic Committee, *Kaiser Wilhelm Institute* 1914–1933
- Admissions Committee, *ETH Zurich* 1912–1914

Community Service

- Emergency Committee of Atomic Scientists, *Chairman* 1946–1955
- International Rescue Committee, *Advisory Board* 1933–1955
- League of Nations Committee on Intellectual Cooperation, *Member* 1922–1932
- World Peace Congress, *Keynote Speaker* 1949

Media Coverage

- Profile Feature, *Time Magazine* 1946
- Interview on Unified Field Theory, *The New York Times* 1950