



The Einstein Symposium 2005 Newsletter

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Issue 1

Annus Mirabilis the Miracle Year

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If we try to label every year, 1905 will be labeled Einstein's Annus Mirabilis "the miracle year". In 1905, Einstein published his 5 major papers on the Special Theory of Relativity, Brownian motion and the Photoelectric effect. It was for his work on the photoelectric effect that he was awarded the 1921 Physics Noble Prize.

To honor the centennial of 1905, the Library of Alexandria is organizing a symposium in June 2005, the year UNESCO declared "World Year of Physics (WYP)".

The Celebration at the Bibliotheca Alexandrina will take place from 4-6 June 2005, and will be honored by the presence of Nobel Laureates and world authorities.

WYP is a worldwide celebration of physics and its importance in our every day life. Physics, not only plays an important role in the development of science and technology, but it also has a tremendous impact on our society. WYP aims to raise the worldwide awareness of physics and physical sciences. It gives us the opportunity to celebrate Einstein, his great ideas, his influence, and how he changed our view of ourselves, our world and the universe at large.



**Albert Einstein
(1879 – 1952)**



BIBLIOTHECA ALEXANDRINA

The Bibliotheca Alexandrina, the new Library of Alexandria, is dedicated to recapture the spirit of the original library. It aspires to be:

- The World's window on Egypt;
- Egypt's window on the world;
- A leading institution of the digital age; and, above all
- A center for learning, tolerance, dialogue and understanding.

The Bibliotheca Alexandrina is more than a library. It is an international center that comprises:

- A library that can hold millions of books;
- Six specialized libraries (Children, Young People, Taha Hussein for the blind and visually impaired, Multimedia, Microforms, and Rare Books and Special Collection);
- Three Museums (Antiquities, Manuscripts and History of Science);
- A Planetarium and an Exploratorium;
- Two permanent exhibitions and six art galleries for temporary exhibitions;
- A conference center for thousands of persons;
- Seven Academic Research Centers covering [Manuscripts, Center for Documentation of Cultural and Natural Heritage (CULTNAT), Calligraphy and Writing, Information Sciences (ISIS), Alexandria and Mediterranean Studies (Alex-Med), Arts Center, and Center for Special Studies and Programs (CSSP)].

The library is pursuing an interlinked program of activities by inviting eminent scholars, artists and researchers to join in the cultural program interacting with the collection strategy which is based along four thematic axes:

- Science and technology, with special emphasis on the ethics of science and technology;
- The humanities, with special emphasis on history and on the emerging new scholarship;
- Art and culture, with special emphasis on the openness to the other and deepening the critical view in understanding artistic expression;
- Development, with special emphasis on water, environment and gender.



A top view of the elegant pedestrian bridge, and of the Planetarium at the Bibliotheca Alexandrina plaza

WHY 2005?

In 1905, at the age of 26, Einstein published his 5 major papers on the special theory of relativity, Brownian motion and the photoelectric effect.

The five papers were:

- Electrodynamics of Moving Bodies;
- Does the Inertia of a Body Depend on Its Energy Content?;
- On a Heuristic Point of View Concerning the Production and Transformation of Light;
- On the Movement of Small Particles Suspended in Stationary Liquids Required by the Molecular-Kinetic Theory of Heat;
- A New Determination of Molecular Dimensions.

Each paper in itself is considered an achievement and has profoundly changed the way we look at our world. It was for the photoelectric effect that he was awarded the 1921 Physics Nobel Prize.

The Library of Alexandria is organizing a symposium in June 2005, to celebrate the centennial of Einstein's miraculous year, 1905.

Starting from the World Congress of Physical Societies in Berlin, December 2000, more than 40 physics societies from around the world approved the proposal to declare 2005 as the 'World Year of Physics', which was later named "The International Year of Physics" by the United Nations.

The World Year of Physics 2005 will bring the excitement of physics to the public and hopefully inspire a new generation of scientists. Timed to coincide with the centennial celebration of Albert Einstein's "miraculous year," the World Year of Physics will feature quite a number of activities all over the world.

Knowledge is Power

Register Now at
www.bibalex.org/Einstein2005

BIOGRAPHY

■ Albert Einstein (1879-1952)

Albert Einstein is one of the most recognized and well-known scientists of the century. His theories solved centuries-old problems in physics and rocked even non-physicists' view of the world.

He was born in 14 March 1879 in Ulm, Württemberg, Germany. Around 1886, Albert Einstein began his schooling in Munich. In 1895, Einstein failed an examination that would have allowed him to study for a diploma as an electrical engineer at the Eidgenössische Technische Hochschule in Zurich.

Einstein graduated in 1900 as a teacher of mathematics and physics, but still with no job till 1901. Einstein worked as a technical expert, third class, in the patent office in Bern from 1902 to 1909. In 1906, he was promoted to technical expert, second class.

In 1905, Einstein earned a doctorate from the University of Zurich for a thesis on a new determination of molecular dimensions. During this year, Einstein shattered many cherished scientific beliefs in five great papers, in special relativity and quantum theory and some other theories, which led him to be the world's leading physicist.

In 1908, Einstein became a lecturer at the University of Bern after

submitting his Habilitation thesis *Consequences for the Constitution of Radiation from the Energy Distribution Law of Black Bodies*.

The following year he became Professor of Physics at the University of Zurich, having resigned his lectureship at Bern and his job in the patent office in Bern. Albert was the youngest member at the Solvay Conference in Brussels, the first World Physics Conference.

About 1912, Einstein began a new phase of his gravitational research, with the help of his friend, mathematician Marcel Grossmann. Einstein named his new work the general theory of relativity. Einstein returned to Germany in 1914 but did not re-apply for German citizenship. What he accepted was an impressive offer. It was a research position in the Prussian Academy of Sciences together with a chair (but no teaching duties) at the University of Berlin. Following a number of false starts, Einstein published, in 1915, the definitive version of the general theory of relativity.

In 1919, when British eclipse expeditions confirmed his predictions, Einstein was idolized by the press. The London Times ran the headline on 7 November 1919 "Revolution in science - New theory of the Universe - Newtonian ideas overthrown".

During 1921, Einstein made his first visit to the United States. His main reason was to raise funds for the planned Hebrew University of Jerusalem. Einstein received the 1921 Physics Nobel Prize not for relativity but rather for his 1905 work on the photoelectric effect. In fact he was not present in December 1922 to receive the prize being on a voyage to Japan.

Niels Bohr and Einstein were to carry on a debate on quantum theory, which began at the Solvay Conference in 1927. Planck, Niels Bohr, de Broglie, Heisenberg, Schrödinger and Dirac were at this conference, in addition to Einstein.

At the beginning of World War II in 2 August 1939, Einstein wrote a letter to US President, Franklin D. Roosevelt. He explained to President Roosevelt recent discoveries about Uranium that indicates the promise of bombs that create a nuclear chain-reaction.

In 1940 Einstein became an American citizen, and chose to retain his Swiss citizenship. He added numerous contributions to peace during his lifetime. In 1944, he made a contribution to the war effort by hand-writing his 1905 paper on special relativity and placing it up for auction. It raised six million dollars. The manuscript today is in the Library of Congress.

By 1949, Einstein was unwell. A hospital-stay helped him recover but he began to prepare for death by drawing up his will in 1950. He bequeathed his scientific papers to

the Hebrew University in Jerusalem, a university which he had raised funds for on his first visit to the USA. Einstein was cremated at Trenton, New Jersey at 4 pm on

18 April 1955 (day of his death). His ashes were scattered at an undisclosed place.

Quotations by Albert Einstein

- Gravitation is not responsible for people falling in love.
- Look deep into nature, and then you will understand everything better.
- The significant problems we face cannot be solved at the same level of thinking we were at when we created them.
- I don't know how man will fight World War III, but I do know how they will fight World War IV; with sticks and stones.
- Only a life lived for others is a life worthwhile.
- The value of a man resides in what he gives and not in what he is capable of receiving.

1905, THE MIRACLE YEAR



2 January
Russo-Japanese War: The Russian fleet surrenders at Port Arthur, China



22 January
Bloody Sunday in St. Petersburg, beginning of the 1905 revolution.



26 January
The Cullinan Diamond is found near Pretoria, South Africa, at the Premier Mine.



3 March
Tsar Nicholas II of Russia agrees to create an elected assembly (the Duma).



18 November
Prince Carl of Denmark becomes King Haakon VII of Norway.

Other Festivity Links

www.wyp2005.org

www.physics2005.org

www.einstein2005.ch

www.spsnational.org

www.einstein.bits.de

www.physics2005.iop.org

www.einsteinyear.org

www.itp.phys.ethz.ch

1879, A YEAR OF EMINENCE

Joseph Stalin (1879-1953)

Joseph Stalin was the second leader of the Soviet Union in 1924. He was the dictator of the Soviet Union for nearly quarter-of-a-century. Widely regarded as a tyrant, Stalin was responsible for massive repression of his people. However, many in the former Soviet Union remember his leadership for advances in technologies and victory in World War II. Many Russians, especially the elderly, see Stalin as a national hero and a great leader.

Bernhard Schmidt (1879-1935)

Swedish-born German, invented and constructed the first Schmidt reflecting telescope using a corrector plate he devised to eliminate image aberration.

Dorothy Canfield Fisher (1879-1958)

She was a best-selling author and social activist who wrote more than 50 books and founded the Book of the Month Club.

William F. Ludwig (1879-1973)

The seeds for the Ludwig Drum Company were planted during a 1908 vaudeville job at the Auditorium Theater in Chicago. In 1955, William successfully bid for the Ludwig portion of the Ludwig-Leedy division. With his old machinery, tooling and designs, the company was altered to Ludwig Drum Company.

Leon Trotsky (1879-1940)

Trotsky employed his writings to oppose Stalin, who gained control of the Soviet Union after the death of Lenin, and to establish an alternative direction for communism, and his followers became known as Trotskyists. Leon Trotsky had a hard time finding a country where he would be allowed to reside. He stayed temporarily in several countries, until he was allowed to reside in Mexico in 1937.

Clyde Cessna (1879-1954)

He was determined to build a single-wing plane that could outperform any biplane. When Cessna finalized that task, during late 1927, his model "AW" as it was known, could reach speeds of



145 miles per hour and remain in the air for more than seven hours. It was innovative and a success.

Sir Thomas Beecham (1879-1961)

Early in his career, as a conductor and producer, he introduced his fellow countrymen to the operas of Richard Strauss, many Russian operas, and the Russian ballet. In 1932, he organized the London Philharmonic Orchestra, thrusting it into one of the world's finest orchestras, and in 1932, he became art director of Covent Garden Opera, London. A frequent conductor of the Hallé Orchestra, Manchester until 1942, he later appeared (1942/43) with the New York Philharmonic Symphony Orchestra and with the Metropolitan Opera, New York. In 1946, he organized the Royal Philharmonic Orchestra, London.

Patrick Henry Pearse (1879-1916)

He was the first president of the provisional government of the Irish Republic proclaimed in Dublin on Easter Monday, 24 April 1916, and was commander-in-chief of the Irish forces in the anti-British uprising that began on the same day.



Albert Einstein, 1912

REGISTRATION FEES

Participant	Egyptian	Non-Egyptian
Adult	EGP 75	\$ 75
Undergraduate	EGP 25	\$ 25

The above registration fees are valid up to 15 May. An increase in fees will be added for registration after this date and up to 4 June to be as follows:

Participant	Egyptian	Non-Egyptian
Adult	EGP 100	\$ 100
Undergraduate	EGP 40	\$ 40

EINSTEIN AND NEWTON

There is a physics parlor game students play: Who was the greater genius? Galileo or Kepler? Maxwell or Bohr? Hawking or Heisenberg? But there are two figures who are simply off the charts. Isaac Newton and Albert Einstein. If insisting, physicists give Newton pride of place, but it is a photo finish -- and no one else is in the race.

Newton's claim is obvious. He created modern physics. His system described the behavior of the entire cosmos -- and while others before him had invented grand schemes, Newton's was different. His theories were mathematical, formulating specific predictions to be confirmed by experiments in the real world.

What about Einstein? Einstein felt compelled to apologize to Newton. "Newton, forgive me" Einstein wrote in his Autobiographical Notes. "You found the only way which, in your age, was just about possible for a man of highest thought and creative power." Forgive him? For what? For replacing Newton's system with his own -- and, like Newton, for putting his mark on virtually every branch of physics.

In 1905, Einstein was 26, a patent examiner, working on physics on his own. After hours, he created the Special Theory of Relativity, in which he demonstrated that measurements of time and distance vary systematically since anything moves relatively towards anything else,

meaning Newton was wrong. Space and time are not absolute -- and the relative universe we inhabit is not the one Newton "discovered."

In March 1905, Einstein created the quantum theory of light; the idea that light exists as particles, that we now call photons. Alongside Max Planck's work on quanta of heat, and Niels Bohr's later work on quanta of matter, Einstein's work anchors the most shocking idea in twentieth century physics: we live in a quantum universe, one built out of tiny, discrete chunks of energy and matter.

Next, in April and May, Einstein published two papers. In one he invented a new method of counting and determining the size of atoms or molecules in a given space and in the other he explained the phenomenon of Brownian motion. The net result is proof that atoms actually exist -- still an issue at that time -- and the end to a millennia-old debate on the fundamental nature of the chemical elements.

Then, in June, Einstein completes special relativity -- which adds a twist to the story: Einstein's March paper treated light as particles, but special relativity relays light as a continuous field of waves. Einstein, age 26, saw light as wave and particle, picking the attribute he needed to confront each problem in turn. Now that is tough.

Of course, Einstein did not finish. Later, in 1905, came an extension of special relativity in which Einstein proved that energy and matter are linked in the most famous relationship in physics: $E=mc^2$. (The energy content of a body is equal to the mass of the body, times the speed of light squared). At first, even Einstein did not grasp the full implications of his formula, even then he suggested that the heat produced by radium could mark the conversion of tiny amounts of the mass of the radium salts into energy.

In total -- an amazing outburst: Einstein's 1905 still evokes awe. Historians call it "The Annus Mirabilis", the miracle year. Einstein ranges from the smallest scale to the largest (for special relativity is embodied in all motion throughout the universe), through fundamental problems on the nature of light energy, matter, motion, time and space--all the while putting in 40 hours a week at the patent office.

And that alone would have been enough to secure Einstein's reputation. But it is what came next that is almost more remarkable. Follow the impact he made during the past 100 years in the coming newsletters.

*Source.: The Mysteries Archives,
by David Icke E-Magazine*

CONFIRMED SPEAKERS

Carlo RUBBIA

Professor of Physics at the University of Rome.

Catherine BRECHIGNAC

Dr Catherine Bréchnignac, Director of Research at the Centre National de Recherche Scientifique (CNRS), France.

Cumrun VAFA

Donor Professor of Science, Harvard University.

Diana L. BUCHWALD

General Editor, The Collected Papers of Albert Einstein, Director, The Einstein Papers Project and Associate Professor of History.

Douglas HOFSTADTER

College Professor of Cognitive Science and Computer Science, Adjunct Professor of History and Philosophy of Science, Philosophy, Comparative Literature, and Psychology and Director of the Center for Research on Concepts and Cognition.

Edward WITTEN

Professor of Physics at the Institute for Advanced Study in Princeton.

Eliezer RABINOVICI

Professor of Physics, Racah Institute of Physics, Hebrew University, Jerusalem.

Gerardus 't HOOFT

Professor of Theoretical Physics at University of Utrecht.

Jacob PALIS

Professor at Instituto de Matemática Pura e Aplicada (IMPA).

John STACHEL

Professor of physics Emeritus, Director, Center of Einstein Studies, Boston University.

Julia Marton LEFÈVRE

Executive Director of LEAD (Leadership for the Environment and Development).

Leon Max LEDERMAN

Director Emeritus of Fermi National Accelerator Laboratory in Batavia, Illinois. He is founder and Chairman of the Teachers Academy for Mathematics and Science, active in the professional development of primary school teachers in Chicago.

M.G.K. MENON

Chairman of Board of Governors of the Indian Institute of Technology (IIT), Delhi for a period of three years.

Michio KAKU

Professor of Theoretical Physics at the City College of the City University of New York.

Mohamed H.A. HASSAN

President of the African Academy of Sciences and executive director of the Third World Academy of Sciences (TWAS), Trieste, Italy.

Mohamed S. EL NASCHIE

Professor in the Institute of Advanced Studies in Frankfurt University, Germany, and Visiting Professor, Cairo University, Egypt.

Murray GELL-MAN

A distinguished Fellow of the Santa Fe Institute.

Paul DAVIES

Professor of Natural Philosophy in the Australian Center for Astrobiology at Macquarie University, Sydney.

Peter GODDARD

Peter Goddard is the Director of the Institute for Advanced Study and Professor of Theoretical Physics at the University of Cambridge.

Philip GRIFFITHS

Professor of Mathematics, and Director Emeritus of the Institute for Advanced Study.

Roger PENROSE

Rouse Ball Professor Emeritus of Mathematics at Oxford. Gresham Professor of Geometry at Gresham College.

Serge HAROCHE

Professor in the Pierre and Marie Curie University. He is a Member in the University Institute of France.

Stephen HAWKING

Lucasian Professor of Mathematics, Department of Applied Mathematics and Theoretical Physics at the University of Cambridge.

Related Sites

www.aip.org/history/einstein

www.alberteinstein.info

www.albert-einstein.org

www-gap.dcs.st-and.ac.uk

www.einstein.caltech.edu

www.amnh.org/exhibitions/einstein

www.albert-einstein.org/.index6

www.en.wikipedia.org/wiki/Einstein



**BIBLIOTHECA
ALEXANDRINA**

P.O. Box 138, Chatby,
Alexandria 21526,
EGYPT

Tel.: +(203) 4839999

Fax: +(203) 4820464

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available on our
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We are on the Web!

www.bibalex.org/Einstein2005

E-MAIL:

Planetarium@bibalex.org

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Einstein
Exhibition
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