

Enrico Fermi And The Revolutions Of Modern Physics

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Atoms in the Family - Laura Fermi 1965

The Last Man who Knew Everything - David N. Schwartz 2017
"In December 1942, a team at the University of Chicago achieved a milestone in human history: a nuclear chain reaction. At the forefront of this breakthrough stood Enrico Fermi, the father of the nuclear age. But as David N. Schwartz shows in this groundbreaking biography, Fermi's impact goes well beyond this epochal event. With his theory of beta decay and his development of quantum statistics, Fermi revolutionized modern physics. Straddling the classical and quantum ages, equally at ease with elegant mathematics and grubby experiments, Fermi truly was the last man who knew everything--at least about physics. In [this book], Schwartz draws from newly discovered archival material and exclusive interviews with those who knew Fermi to reveal the complex figure behind these historic contributions. A reluctant member of the Italian Fascist party, Fermi escaped to New York when Mussolini promulgated a series of anti-Semitic laws that put his wife, Laura, at risk. A citizen of an Axis power at the heart of the US government's most secret war effort, the Manhattan Project, he became one of its leading lights. A less-than-ideal father and husband, he was nevertheless one of history's greatest scientific mentors and teachers. He was also a deep thinker, as perspicacious about extraterrestrial life as he was about quantum field theory. The Last Man Who Knew Everything brings Fermi's brilliant, complex genius to life in a profound and consuming read."--Dust jacket flap.

Galileo and the Scientific Revolution - Laura Fermi 2013-02-21
An absorbing account of the origins of modern science as well as a biography, this book places particular emphasis on Galileo's experiments with telescopes and his observations of the sky.
Physics with Many Positrons - Alfredo Dupasquier 2010
With the exception of positron emission tomography (PET), the field of low energy positron science produces relatively few academic articles each year compared to more accessible fields. Though much has been achieved since the publication of two related volumes earlier in this series: Positron Solid State Physics (1981) and Positron Spectroscopy of Solids (1993), only the first steps have been made towards 'physics with many positrons': physical situations where the interactions of positrons with positrons can be observed. This 2009 "Enrico Fermi School" aims to stimulate the field o.

Notes on Quantum Mechanics - Enrico Fermi 1995-07
The lecture notes presented here in facsimile were prepared by Enrico Fermi for students taking his course at the University of Chicago in 1954. They are vivid examples of his unique ability to lecture simply and clearly on the most essential aspects of quantum mechanics. At the close of each lecture, Fermi created a single problem for his students. These challenging exercises were not included in Fermi's notes but were preserved in the notes of his students. This second edition includes a set of these assigned problems as compiled by one of his former students, Robert A. Schluter. Enrico Fermi was awarded the Nobel Prize for Physics in 1938.

NUCLEAR PHYSICS : A COURSE GIVEN BY ENRICO FERMI AT THE UNIVERSITY OF CHICAGO. - Enrico Fermi 1950

The Lost Notebook of ENRICO FERMI - Francesco Guerra 2017-11-27
This book tells the curious story of an unexpected finding that

sheds light on a crucial moment in the development of physics: the discovery of artificial radioactivity induced by neutrons. The finding in question is a notebook, clearly written in Fermi's handwriting, which records the frenzied days and nights that Fermi spent experimenting alone, driven by his theoretical ideas on beta decay. The notebook was found by the authors while browsing through documents left by Oscar D'Agostino, the chemist among Fermi's group. From Fermi's notes, they reconstruct with skill and expertise the detailed timeline of the critical days leading up to his vital discovery. While much is already known about the road that led Fermi to his important result, this is the first time that it has been possible to reconstruct precisely when and how the initial evidence of neutron-induced decay was obtained. In relating this fascinating story, the book will be of great interest not only to those with a passion for the history of science but also to a wider audience.

Atoms in the Family - Laura Fermi 2014-01-01
In this absorbing account of life with the great atomic scientist Enrico Fermi, Laura Fermi tells the story of their emigration to the United States in the 1930s part of the widespread movement of scientists from Europe to the New World that was so important to the development of the first atomic bomb. Combining intellectual biography and social history, Laura Fermi traces her husband's career from his childhood, when he taught himself physics, through his rise in the Italian university system concurrent with the rise of fascism, to his receipt of the Nobel Prize, which offered a perfect opportunity to flee the country without arousing official suspicion, and his odyssey to the United States."

The Theoretical Minimum - Leonard Susskind 2014-04-22
A master teacher presents the ultimate introduction to classical mechanics for people who are serious about learning physics "Beautifully clear explanations of famously 'difficult' things," -- Wall Street Journal If you ever regretted not taking physics in college -- or simply want to know how to think like a physicist -- this is the book for you. In this bestselling introduction to classical mechanics, physicist Leonard Susskind and hacker-scientist George Hrabovsky offer a first course in physics and associated math for the ardent amateur. Challenging, lucid, and concise, The Theoretical Minimum provides a tool kit for amateur scientists to learn physics at their own pace.

Elementary Particles - Enrico Fermi 2003-01-01

Enrico Fermi - Erica Stux 2004
Enrico Fermi is one of the most important scientists of the twentieth century. For twenty-five years, he dominated the field of physics, as his work greatly advanced scientists' understanding of atomic behavior. Although he won the Nobel Prize in 1938 for his work with slow neutrons, he is probably best known for achieving the first controlled, self-sustaining chain reaction. This led to the use of nuclear power as a new source of energy, as well as the development of the first atomic bomb. Today, Fermi's legacy is inescapable. Several institutions in the U. S. and Italy bear his name. The unit of length for a proton or neutron is called a "fermi." Electrons, protons, and neutrons are collectively called "fermions" because they behave according to the statistics worked out by Fermi and physicist Paul Dirac. The element fermium was also named for Fermi. Enrico Fermi's work in physics brought honor to his native land of Italy and, later, to his adopted homeland, the United States. Book jacket.

Notes on Quantum Mechanics - E. Fermi 1995

Nuclear Physics - Enrico Fermi 1950

This volume presents, with some amplification, the notes on the lectures on nuclear physics given by Enrico Fermi at the University of Chicago in 1949. "The compilers of this publication may be warmly congratulated. . . . The scope of this course is amazing: within 240 pages it ranges from the general properties of atomic nuclei and nuclear forces to mesons and cosmic rays, and includes an account of fission and elementary pile theory. . . . The course addresses itself to experimenters rather than to specialists in nuclear theory, although the latter will also greatly profit from its study on account of the sound emphasis laid everywhere on the experimental approach to problems. . . . There is a copious supply of problems."—Proceedings of the Physical Society "Only a relatively few students are privileged to attend Professor Fermi's brilliant lectures at the University of Chicago; it is therefore a distinct contribution to the followers of nuclear science that his lecture material has been systematically organized in a publication and made available to a much wider audience."—Nucelonics

Heavy flavour physics : a probe of nature's grand design ; proceedings of the International School of Physics "Enrico Fermi" ; course CXXXVII ; Varenna on Lake Como, Villa Monastero, 8 - 18 July 1997 - Ikaros I. Bigi 1998

Exercises and Problems in Mathematical Methods of Physics - Giampaolo Cicogna 2020-10-30

This book is the second edition, whose original mission was to offer a new approach for students wishing to better understand the mathematical tenets that underlie the study of physics. This mission is retained in this book. The structure of the book is one that keeps pedagogical principles in mind at every level. Not only are the chapters sequenced in such a way as to guide the reader down a clear path that stretches throughout the book, but all individual sections and subsections are also laid out so that the material they address becomes progressively more complex along with the reader's ability to comprehend it. This book not only improves upon the first in many details, but it also fills in some gaps that were left open by this and other books on similar topics. The 350 problems presented here are accompanied by answers which now include a greater amount of detail and additional guidance for arriving at the solutions. In this way, the mathematical underpinnings of the relevant physics topics are made as easy to absorb as possible.

Enrico Fermi - Dan Cooper 1999-02-04

A biography of the Nobel Prize-winning physicist whose work led to the discovery of nuclear fission, the basis of nuclear power and the atom bomb.

Enrico Fermi - Giuseppe Bruzzaniti 2016-03-21

This biography explores the life and career of the Italian physicist Enrico Fermi, which is also the story of thirty years that transformed physics and forever changed our understanding of matter and the universe: nuclear physics and elementary particle physics were born, nuclear fission was discovered, the Manhattan Project was developed, the atomic bombs were dropped, and the era of "big science" began. It would be impossible to capture the full essence of this revolutionary period without first understanding Fermi, without whom it would not have been possible. Enrico Fermi: The Obedient Genius attempts to shed light on all aspects of Fermi's life - his work, motivation, influences, achievements, and personal thoughts - beginning with the publication of his first paper in 1921 through his death in 1954. During this time, Fermi demonstrated that he was indeed following in the footsteps of Galileo, excelling in his work both theoretically and experimentally by deepening our understanding of the Pauli exclusion principle, winning the Nobel Prize for his discovery of the fundamental properties of slow neutrons, developing the theory of beta decay, building the first nuclear reactor, and playing a central role in the development of the atomic bomb. Interwoven with this fascinating story, the book details the major developments in physics and provides the necessary background material to fully appreciate the dramatic changes that were taking place. Also included are appendices that provide a timeline of Fermi's life, several primary source

documents from the period, and an extensive bibliography. This book will enlighten anyone interested in Fermi's work or the scientific events that led to the physics revolution of the first half of the twentieth century.

Galileo Unbound - David D. Nolte 2018-07-12

Galileo Unbound traces the journey that brought us from Galileo's law of free fall to today's geneticists measuring evolutionary drift, entangled quantum particles moving among many worlds, and our lives as trajectories traversing a health space with thousands of dimensions. Remarkably, common themes persist that predict the evolution of species as readily as the orbits of planets or the collapse of stars into black holes. This book tells the history of spaces of expanding dimension and increasing abstraction and how they continue today to give new insight into the physics of complex systems. Galileo published the first modern law of motion, the Law of Fall, that was ideal and simple, laying the foundation upon which Newton built the first theory of dynamics. Early in the twentieth century, geometry became the cause of motion rather than the result when Einstein envisioned the fabric of space-time warped by mass and energy, forcing light rays to bend past the Sun. Possibly more radical was Feynman's dilemma of quantum particles taking all paths at once — setting the stage for the modern fields of quantum field theory and quantum computing. Yet as concepts of motion have evolved, one thing has remained constant, the need to track ever more complex changes and to capture their essence, to find patterns in the chaos as we try to predict and control our world.

Enrico Fermi - Sam Epstein 1970

A biography of the Nobel prize-winning physicist who designed the first atomic piles, produced the first nuclear chain reaction, and aided in the development of the atomic bomb.

Nuclear Physics - Enrico Fermi 1963

Enrico Fermi: Pioneer of the Atomic Age - Ted Gottfried 1992

Enrico Fermi - Dan Cooper 1999

A biography of the Nobel Prize-winning physicist whose work led to the discovery of nuclear fission, the basis of nuclear power and the atom bomb.

A to Z of Physicists, Updated Edition - Darryl Leiter 2019-11-01

A to Z of Physicists, Updated Edition focuses not only on the lives and personalities of those profiled, but also on their research and contributions to the field. A fascinating and important element of this work is the attention paid to the obstacles that minority physicists had to overcome to reach their personal and professional goals. Through incidents, quotations, and photographs, the entries portray something of the human face, which is often lost in books on science and scientists. A to Z of Physicists, Updated Edition features more than 150 entries and 51 black-and-white photographs. Culturally inclusive and spanning the whole range of physicists from ancient times to the present day, this is an ideal resource for students and general readers interested in the history of physics or the significant aspects of the personal and professional lives of important physicists. People covered include: Archimedes (ca. 285–212 BCE) Homi Jehangir Bhabha (1909–1966) Pavel Alekseyevich Cherenkov (1904–1990) Marie Curie (1867–1934) George Gamow (1904–1968) Tsung Dao Lee (1926–present) Lise Meitner (1878–1968) Yuval Ne'eman (1925–2006) Johannes Stark (1874–1957) Nikola Tesla (1856–1943) Alessandro Volta (1745–1827) Hideki Yukawa (1907–1981)

The Equations of Materials - Brian Cantor 2020-02-05

This primer describes important equations of materials and the scientists who derived them. It provides an excellent introduction to the subject by making the material accessible and enjoyable. The book is dedicated to a number of propositions: 1. The most important equations are often simple and easily explained; 2. The most important equations are often experimental, confirmed time and again; 3. The most important equations have been derived by remarkable scientists who lived interesting lives. Each chapter covers a single equation and materials subject, and is structured in three sections: first, a description of the equation itself; second, a short biography of the scientist after whom it is named; and third, a discussion of some of the ramifications and applications of the equation. The biographical sections intertwine

the personal and professional life of the scientist with contemporary political and scientific developments. Topics included are: Bravais lattices and crystals; Bragg's law and diffraction; the Gibbs phase rule and phases; Boltzmann's equation and thermodynamics; the Arrhenius equation and reactions; the Gibbs-Thomson equation and surfaces; Fick's laws and diffusion; the Scheil equation and solidification; the Avrami equation and phase transformations; Hooke's law and elasticity; the Burgers vector and plasticity; Griffith's equation and fracture; and the Fermi level and electrical properties. The book is written for students interested in the manufacture, structure, properties and engineering application of materials such as metals, polymers, ceramics, semiconductors and composites. It requires only a working knowledge of school maths, mainly algebra and simple calculus.

Proceedings of the International School of Physics "Enrico Fermi." - Società italiana di fisica 2007

The field of cold atomic gases faced a revolution in 1995 when Bose-Einstein condensation was achieved. The quest for ultra-cold Fermi gases started shortly after the 1995 discovery, and quantum degeneracy in a gas of fermionic atoms was obtained in 1999. This work covers experimental techniques for the creation and study of Fermi quantum gases.

Nuclear Physics - Enrico Fermi 1950

Enrico Fermi, Physicist - Emilio Segrè 2019-08-09

In this biography of Enrico Fermi (1901-54), who won the Nobel Prize in physics in 1938 for his work on radioactivity by neutron bombardment and his discovery of transuranic elements and who achieved the first controlled nuclear chain reaction in Chicago in 1942, his student, collaborator, fellow Nobel Prize winner and lifelong friend Emilio Segrè presents the scientist, and explains in nontechnical terms Fermi's work and his achievements. "Segrè's description of Fermi's early life and his involvement with and commitment to physics is extremely interesting... Segrè understands and describes very clearly the outstanding characteristics of Fermi's theoretical work: clarity and completeness... Segrè has succeeded admirably in describing Fermi's entire scientific career, and this book is strongly recommended." — M. L. Goldberger, *Science* "We must thank Emilio Segrè for this authoritative, revealing and inspiring book. It covers in a masterly fashion the most exciting thirty years of modern physics and the character and activities of one of its greatest contributors." — *Nature* "A rich, well-rounded portrait of [Fermi] the scientist, his methods, intellectual history, and achievements. Explaining in nontechnical terms the scientific problems Fermi faced or solved, *Enrico Fermi, Physicist* contains illuminating material concerning Fermi's youth in Italy and the development of his scientific style." — *Physics Today* "All that might be hoped for in a biography of one Nobel Prize winner in physics by another has been realized in Emilio Segrè's biography of his friend, Enrico Fermi... A truly masterly drawing of Fermi's character, along with his physics and the events through which he moved, Segrè has provided us with a brilliant appreciation of one of the most pre-eminent figures of modern physics." — *Physics Bulletin* "This excellent biography, written by one of the original group who worked with him during the 1930s at Rome, catches beautifully the style and spirit of its subject... With Fermi's passing the age of the universal experimental and theoretical physicist is gone. Segrè's book tells the story of this heroic age of physics and of its principal actor; it is a delight to read, and I recommend it heartily." — *American Scientist* "Here we meet the man at work and we see the meticulous scientist... This book also shows us another facet of Fermi: that of the conscientious scientist torn between his love of pure research and his love of teaching." — V. Barocas, *Annals of Science* "Segrè is a sensitive biographer, responsive to all problems that can plague the creative scientist; he shows, above all, Fermi's dedication, zeal, and extraordinary talents. Segrè has provided more than sympathy. Much that is new about Fermi's youth in Italy appears here... [A] very rewarding book... Every physicist will want to read this biography, along with every reader who has an interest in intellectual developments during the 1920-1960 era." — J. Z. Fullmer, *The Ohio Journal of Science*

Neutron Physics for Nuclear Reactors - Enrico Fermi 2010

This unique volume gives an accurate and very detailed description of the functioning and operation of basic nuclear reactors, as emerging from yet unpublished papers by Nobel Laureate Enrico Fermi. In the first part, the entire course of lectures on Neutron Physics delivered by Fermi at Los Alamos is reported, according to the version made by Anthony P French. Here, the fundamental physical phenomena are described very clearly and comprehensively, giving the appropriate physics grounds for the functioning of nuclear piles. In the second part, all the patents issued by Fermi (and coworkers) on the functioning, construction and operation of several different kinds of nuclear reactors are reported. Here, the main engineering problems are encountered and solved by employing simple and practical methods, which are described in detail. This seminal work mainly caters to students, teachers and researchers working in nuclear physics and engineering, but it is of invaluable interest to historians of physics too, since the material presented here is entirely novel.

Focus On: 100 Most Popular American Agnostics - Wikipedia contributors

From nuclei and their constituents to stars : proceedings of the International School of Physics "Enrico Fermi", course CLIII ; Varenna on Lake Como ; Villa Monastero, 6 - 16 August 2002 - A. Molinari 2003

Revolutions in Twentieth-Century Physics - David J. Griffiths 2013

1. Classical foundations -- 2. Special relativity -- 3. Quantum mechanics -- 4. Elementary particles -- 5. Cosmology.

History of Twentieth Century Physics - International School of Physics "Enrico Fermi." 1977

The Pope of Physics - Gino Segrè 2016-10-18

Enrico Fermi is unquestionably among the greats of the world's physicists, the most famous Italian scientist since Galileo. Called the Pope by his peers, he was regarded as infallible in his instincts and research. His discoveries changed our world; they led to weapons of mass destruction and conversely to life-saving medical interventions. This unassuming man struggled with issues relevant today, such as the threat of nuclear annihilation and the relationship of science to politics. Fleeing Fascism and anti-Semitism, Fermi became a leading figure in America's most secret project: building the atomic bomb. The last physicist who mastered all branches of the discipline, Fermi was a rare mixture of theorist and experimentalist. His rich legacy encompasses key advances in fields as diverse as cosmic rays, nuclear technology, and early computers. In their revealing book, *The Pope of Physics*, Gino Segrè and Bettina Hoerlin bring this scientific visionary to life. An examination of the human dramas that touched Fermi's life as well as a thrilling history of scientific innovation in the twentieth century, this is the comprehensive biography that Fermi deserves.

The Last Man Who Knew Everything - David N. Schwartz 2017-12-05

The definitive biography of the brilliant, charismatic, and very human physicist and innovator Enrico Fermi In 1942, a team at the University of Chicago achieved what no one had before: a nuclear chain reaction. At the forefront of this breakthrough stood Enrico Fermi. Straddling the ages of classical physics and quantum mechanics, equally at ease with theory and experiment, Fermi truly was the last man who knew everything--at least about physics. But he was also a complex figure who was a part of both the Italian Fascist Party and the Manhattan Project, and a less-than-ideal father and husband who nevertheless remained one of history's greatest mentors. Based on new archival material and exclusive interviews, *The Last Man Who Knew Everything* lays bare the enigmatic life of a colossus of twentieth century physics. NOTES ON QUANTUM MECHANICS. - E. FERMI 1961

Enrico Fermi - Carlo Bernardini 2013-11-11

Enrico Fermi's scientific work, noted for its originality and breadth, has had lasting consequences throughout modern science. Written by close colleagues as well as scientists whose fields were profoundly influenced by Fermi, the papers collected here constitute a tribute to him and his scientific legacy. They

were commissioned on the occasion of his 100th birthday by the Italian Physical Society and confirm that Fermi was a rare combination of theorist, experimentalist, teacher, and inspiring colleague. The book is organized into three parts: three biographical overviews by close colleagues, replete with personal insights; fourteen analyses of Fermi's impact by specialists in their fields, spanning physics, chemistry, mathematics, and engineering; and a year-by-year chronology of Fermi's scientific endeavors. Written for a general scientific audience, *Enrico Fermi: His Work and Legacy* offers a highly readable source on the life of one of the 20th century's most distinguished scientists and a must for everybody interested in the history of modern science.

Atoms in the Family - Laura Fermi 2014-10-24

In this absorbing account of life with the great atomic scientist Enrico Fermi, Laura Fermi tells the story of their emigration to the United States in the 1930s—part of the widespread movement of scientists from Europe to the New World that was so important to the development of the first atomic bomb. Combining intellectual biography and social history, Laura Fermi traces her husband's career from his childhood, when he taught himself physics, through his rise in the Italian university system concurrent with the rise of fascism, to his receipt of the Nobel Prize, which offered a perfect opportunity to flee the country

without arousing official suspicion, and his odyssey to the United States.

Fermi Remembered - Enrico Fermi 2004-08-16

The volume also features extensive university archival material - including correspondence between Fermi and biophysicist Leo Szilard and a letter from Harry Truman - with new introductions that provide context for both the history of physics and the academic tradition at the University of Chicago."--Jacket.

Neutron Physics for Nuclear Reactors -

The Theory of Almost Everything - Robert Oerter 2006-09-26

There are two scientific theories that, taken together, explain the entire universe. The first, which describes the force of gravity, is widely known: Einstein's General Theory of Relativity. But the theory that explains everything else—the Standard Model of Elementary Particles—is virtually unknown among the general public. In *The Theory of Almost Everything*, Robert Oerter shows how what were once thought to be separate forces of nature were combined into a single theory by some of the most brilliant minds of the twentieth century. Rich with accessible analogies and lucid prose, *The Theory of Almost Everything* celebrates a heretofore unsung achievement in human knowledge—and reveals the sublime structure that underlies the world as we know it.