

SELECTED PAPERS ON
QUANTUM
ELECTRODYNAMICS

EDITED BY JULIAN SCHWINGER

Nobel Laureate

Selected Papers On Quantum Electrodynamics

Laurie M Brown



Selected Papers On Quantum Electrodynamics:

Selected Papers on Quantum Electrodynamics Julian Schwinger, 1958-01-01 This monumental collection of 34 historical papers on quantum electrodynamics features contributions by the 20th century's leading physicists Dyson Fermi Feynman Foley Oppenheimer Pauli Weisskopf and others Twenty nine are in English three in German and one each in French and Italian Editor Julian Schwinger won a Nobel Prize for his pioneering work in quantum electrodynamics **Selected Papers on Quantum Electrodynamics**, 1958 *Selected Papers on Quantum Electrodynamics* Julian Seymour Schwinger, 1958 34 papers by Feynman Fermi Heisenberg Dyson Weisskopf Oppenheimer Pauli Schwinger Klein others 3 papers in German 1 each in French and Italian balance in English *Quantum Electrodynamics* Julian Schwinger, 1958

Selected Papers Of Richard Feynman (With Commentary) Laurie M Brown, 2000-10-25 These scientific papers of Richard Feynman are renowned for their brilliant content and the author's striking original style They are grouped by topic path integral approach to the foundations of quantum mechanics and quantum field theory renormalized quantum electrodynamics theory of superfluid liquid helium theory of the Fermi interaction polarons gravitation partons computer theory etc Comments on Feynman's topics are provided by the editor together with biographical notes and a complete bibliography of Feynman's publications *The Birth of Particle Physics* Laurie M. Brown, Lillian Hoddeson, 1986-10-31 A distinctive collection of essays discussions and personal descriptions of the evolution of particle physics *Quantum electrodynamics* Julian Schwinger, 1958 [Selected Papers of Léon Rosenfeld](#) Robert S. Cohen, J.J. Stachel, 2012-12-06 The decision to undertake this volume was made in 1971 at Lake Como during the Varenna summer school of the Italian Physical Society where Professor Leon Rosenfeld was lecturing on the history of quantum theory We had long been struck by the unique blend of epistemological historical and social concerns in his work on the foundations and development of physics and decided to approach him there with the idea of publishing a collection of his papers He responded enthusiastically and agreed to help us select the papers furthermore he also agreed to write a lengthy introduction and to comment separately on those papers that he felt needed critical re-evaluation in the light of his current views For he was still vigorously engaged in both theoretical investigations of and critical reflections on the foundations of theoretical physics We certainly did conceive of the volume as a memorial to a living saint but rather more practically as a useful tool to place in the hands of fellow workers and students engaged in wrestling with these difficult problems All too sadly fate has added a memorial aspect to our labors We agreed that in order to make this book most useful for the contemporary community of physicists and philosophers we should translate all non-English items into English **Selected Papers of Freeman Dyson with Commentary** Freeman J. Dyson, 1996 This book offers a unique compilation of papers in mathematics and physics from Freeman Dyson's 50 years of activity and research These are the papers that Dyson considers most worthy of preserving and many of them are classics The papers are accompanied by commentary explaining the context from which they originated

and the subsequent history of the problems that either were solved or left unsolved This collection offers a connected narrative of the developments in mathematics and physics in which the author was involved beginning with his professional life as a student of G H Hardy *Basics of Quantum Electrodynamics* Ioan Merches,Dorian Tatomir,Roxana E. Lupu,2012-12-05 Quantum electrodynamics QED is the branch of relativistic quantum field theory that deals specifically with the interactions between charged particles It is widely used to solve problems in many areas of physics such as elementary particles atomic and molecular systems and solid state physics This accessible text *Basics of Quantum Electrody Selected Papers (1945-1980), with Commentary* Chen Ning Yang,2005 Consists of 73 articles and added items exclusively for this edition **Non-Relativistic QED Theory of the van der Waals Dispersion Interaction** Akbar Salam,2016-09-29 This book provides details of the calculation of the interaction between two neutral polarizable atoms or molecules using molecular quantum electrodynamics QED To better understand the origin of this force it briefly outlines molecular QED theory the well known van der Waals dispersion potential first evaluated by Casimir and Polder who accounted for retardation effects It presents different calculation schemes for the evaluation of the dispersion potential and also discusses energy shifts involving electric quadrupole and octupole moments along with discriminatory dispersion potentials Further it explores in detail non additive dispersion interaction energies between three bodies as well as the effects of higher multipole moment correction terms and provides results for specific geometries such as collinear and equilateral triangles Lastly it computes near and far zone asymptotic limits for both pair and many body potentials with the former shown to agree with less rigorous semi classical calculations **Pneumatology of Matter** David Gunn,2013 A new study of modern physical principles sheds light on the mind body problem freewill and other philosophical conundrums *Classical Mechanics and Quantum Mechanics: An Historic-Axiomatic Approach* Peter Enders,2019-09-05 This unique textbook presents a novel axiomatic pedagogical path from classical to quantum physics Readers are introduced to the description of classical mechanics which rests on Euler s and Helmholtz s rather than Newton s or Hamilton s representations Special attention is given to the common attributes rather than to the differences between classical and quantum mechanics Readers will also learn about Schr dinger s forgotten demands on quantization his equation Einstein s idea of quantization as selection problem The Schr dinger equation is derived without any assumptions about the nature of quantum systems such as interference and superposition or the existence of a quantum of action h The use of the classical expressions for the potential and kinetic energies within quantum physics is justified Key features Presents extensive reference to original texts Includes many details that do not enter contemporary representations of classical mechanics although these details are essential for understanding quantum physics Contains a simple level of mathematics which is seldom higher than that of the common Riemannian integral Brings information about important scientists Carefully introduces basic equations notations and quantities in simple steps This book addresses the needs of physics students teachers and historians with its simple easy to

understand presentation and comprehensive approach to both classical and quantum mechanics **QED and the Men Who Made It** S. S. Schweber, 2020-05-05 In the 1930s physics was in a crisis There appeared to be no way to reconcile the new theory of quantum mechanics with Einstein's theory of relativity Several approaches had been tried and had failed In the post World War II period four eminent physicists rose to the challenge and developed a calculable version of quantum electrodynamics QED probably the most successful theory in physics This formulation of QED was pioneered by Freeman Dyson Richard Feynman Julian Schwinger and Sin Itiro Tomonaga three of whom won the Nobel Prize for their work In this book physicist and historian Silvan Schweber tells the story of these four physicists blending discussions of their scientific work with fascinating biographical sketches Setting the achievements of these four men in context Schweber begins with an account of the early work done by physicists such as Dirac and Jordan and describes the gathering of eminent theorists at Shelter Island in 1947 the meeting that heralded the new era of QED The rest of his narrative comprises individual biographies of the four physicists discussions of their major contributions and the story of the scientific community in which they worked Throughout Schweber draws on his technical expertise to offer a lively and lucid explanation of how this theory was finally established as the appropriate way to describe the atomic and subatomic realms *Mathematical Theory of Feynman Path Integrals* Sergio Albeverio, Rafael Høegh-Krohn, Sonia Mazzocchi, 2008-05-30 The 2nd edition of LNM 523 is based on the two first authors mathematical approach of this theory presented in its 1st edition in 1976 An entire new chapter on the current forefront of research has been added Except for this new chapter and the correction of a few misprints the basic material and presentation of the first edition has been maintained At the end of each chapter the reader will also find notes with further bibliographical information *Lorentz and Poincaré Invariance* Jong-Ping Hsu, Yuanzhong Zhang, 2001 This collection of papers provides a broad view of the development of Lorentz and Poincaré invariance and spacetime symmetry throughout the past 100 years The issues explored in these papers include 1 formulations of relativity theories in which the speed of light is not a universal constant but which are consistent with the four dimensional symmetry of the Lorentz and Poincaré groups and with experimental results 2 analyses and discussions by Reichenbach concerning the concepts of simultaneity and physical time from a philosophical point of view and 3 results achieved by the union of the relativity and quantum theories marking the beginnings of quantum electrodynamics and relativistic quantum mechanics Ten of the fundamental experiments testing special relativity are also discussed showing that they actually support a four dimensional spacetime based on broad Lorentz and Poincaré invariance which is more general than and includes the special theory of relativity The generalization of the concepts of simultaneity physical time and the nature of the speed of light within a four dimensional spacetime framework leads to the conclusion that the symmetries embodied by the special theory of relativity can be realized using only a single postulate the principle of relativity for physical laws *Electromagnetic Radiation: Variational Methods, Waveguides and Accelerators* Kimball Milton, J. Schwinger, 2006-04-13 Julian Schwinger was

already the world's leading nuclear theorist when he joined the Radiation Laboratory at MIT in 1943 at the ripe age of 25. Just 2 years earlier he had joined the faculty at Purdue after a postdoc with Oppenheimer in Berkeley and graduate study at Columbia. A nearly semester at Wisconsin had confirmed his penchant to work at night so as not to have to interact with Breit and Wigner there. He was to perfect his iconoclastic habits in his more than 2 years at the Rad Lab. Despite its deliberately misleading name, the Rad Lab was not involved in nuclear physics which was imagined then by the educated public as a esoteric science without possible military application. Rather the subject at hand was the perfection of radar, the beaming and reflection of microwaves which had already saved Britain from the German onslaught. Here was a technology which won the war rather than one that prematurely ended it at a still incalculable cost. It was partly for that reason that Schwinger joined this effort rather than what might have appeared to be the more natural project for his awesome talents, the development of nuclear weapons at Los Alamos. He had got a bit of a taste of that at the Metallurgical Laboratory in Chicago and did not much like it. Perhaps more important for his decision to go to and stay at MIT during the war was its less regimented and isolated environment.

Quantum Field Theory: A Tourist Guide for Mathematicians Gerald B. Folland, 2021-02-03. Quantum field theory has been a great success for physics but it is difficult for mathematicians to learn because it is mathematically incomplete. Folland, who is a mathematician, has spent considerable time digesting the physical theory and sorting out the mathematical issues in it. Fortunately for mathematicians, Folland is a gifted expositor. The purpose of this book is to present the elements of quantum field theory with the goal of understanding the behavior of elementary particles rather than building formal mathematical structures in a form that will be comprehensible to mathematicians. Rigorous definitions and arguments are presented as far as they are available but the text proceeds on a more informal level when necessary with due care in identifying the difficulties. The book begins with a review of classical physics and quantum mechanics then proceeds through the construction of free quantum fields to the perturbation theoretic development of interacting field theory and renormalization theory with emphasis on quantum electrodynamics. The final two chapters present the functional integral approach and the elements of gauge field theory including the Salam-Weinberg model of electromagnetic and weak interactions.

Drawing Theories Apart David Kaiser, 2009-11-15. Winner of the 2007 Pfizer Prize from the History of Science Society. Feynman diagrams have revolutionized nearly every aspect of theoretical physics since the middle of the twentieth century. Introduced by the American physicist Richard Feynman in 1918-88 soon after World War II as a means of simplifying lengthy calculations in quantum electrodynamics, they soon gained adherents in many branches of the discipline. Yet as new physicists adopted the tiny line drawings, they also adapted the diagrams and introduced their own interpretations. *Drawing Theories Apart* traces how generations of young theorists learned to frame their research in terms of the diagrams and how both the diagrams and their users were molded in the process. Drawing on rich archival materials, interviews, and more than five hundred scientific articles from the period, *Drawing Theories Apart* uses

the Feynman diagrams as a means to explore the development of American postwar physics By focusing on the ways young physicists learned new calculational skills David Kaiser frames his story around the crafting and stabilizing of the basic tools in the physicist's kit thus offering the first book to follow the diagrams once they left Feynman's hands and entered the physics vernacular

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