

1. Record Nr.	UNINA9910851988203321
Autore	Manoukian Edward B.
Titolo	How Energy Considerations Have Shaped Our Fundamental Modern Theories of Physics : Theory and Key Historical Moments / / by E. B. Manoukian
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2024
ISBN	9783031511998 3031511999
Edizione	[1st ed. 2024.]
Descrizione fisica	1 online resource (XX, 267 p. 59 illus.)
Disciplina	509
Soggetti	Physics - History Mathematical physics History of Physics and Astronomy Theoretical, Mathematical and Computational Physics
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Chapter 1. The quantum world at Low Energies -- Chapter 2. Higher Energies, Arena of Fundamental Particles, their Classifications and Underlying Symmetries -- Chapter 3. Fields and Dynamical descriptions of Fundamental Particles, the Key Role of Renormalization and its underlying physics -- Chapter 4. High Energies and Switching on Gravity: General Relativity and Great Achievements -- Chapter 5. Quantum Gravity and Difficulties of treatments by Conventional Methods -- Chapter 6. Putting Everything Together to Create the Universe from Scratch and observing it as it ages.
Sommario/riassunto	At long last, with sufficient technical details, emphasizing key historical moments, a book that develops all of fundamental modern theoretical physics from energy considerations in a compact form. Starting with a few electron-volts of atoms in the quantum world at low energies extending up to quantum gravity and beyond to the birth of the Universe, readers will experience the entire spectrum of fundamental modern theoretical physics, with one theory leading to another in an integrated unified manner. Energy considerations lead to the development of special and general relativity, quantum field theory,

renormalization theory, modern quantum electrodynamics, electroweak theory, the standard model of particle physics, grand unified theories, string theory, the current standard model of inflationary big bang theory, and even to the birth of the Higgs field, and in developments of quantum gravity. Unfortunately, due to strong specialization within their fields, students and many practicing physicists are exposed only to parts of the beautiful story of modern fundamental physics. Here the entire story is told! This is a must-read book for graduate students, advanced undergraduate students, instructors and professionals who are interested in all aspects of fundamental modern theoretical physics and key historical moments in its development.
