

CONTENTS

LIST OF CONTRIBUTORS	v
PREFACE	vii
CONTENTS OF OTHER VOLUMES	xii

Analysis of Present Evidence on the Validity of Quantum Electrodynamics

R. Gatto

I. Introduction	2
II. The Lamb Shift Measurements and Their Implications	3
III. The Hyperfine Structure of Atomic Hydrogen	9
IV. Hyperfine Splitting in Muonium. Determinations of the Fine Structure Constant	14
V. The Anomalous Magnetic Moment of the Electron	18
VI. The Muon Magnetic Moment	22
VII. Electron and Muon Scattering by Electrons and Nucleons	28
VIII. Wide-Angle Electron Pair Production and Bremsstrahlung	30
IX. Photoproduction of Muon Pairs	39
X. Possible Tests from Trident Processes	43
XI. Tests of Quantum Electrodynamics with Electron-Electron and Electron- Positron Colliding Beams	47
XII. Discussion on Possible New Couplings	58
XIII. Conclusions	62
References	65

High Energy Strong Interactions of Elementary Particles

L. Bertocchi and E. Ferrari

I. Introduction	72
II. Review of the Experimental Situation in High Energy Elementary Particle Collisions	73
III. General Properties of the Scattering Amplitude	111
IV. The Elastic Scattering	129
V. Models for the Inelastic Interactions	176
VI. The Models for Very High Energies	193
References	204

Peripheral Processes*A. C. Hearn and S. D. Drell*

I. Introduction	219
II. Early Developments	220
III. The Peripheral Model with Form Factors	228
IV. The Peripheral Model with Absorption	232
V. K-Matrix Models of Peripheral Processes	248
VI. Beams	255
References	262

Interactions at Very High Energies*J. M. Kidd*

I. Introduction	265
II. Experimental Situation	272
III. The Isobar Model	292
IV. Secondary Spectra	293
V. Charge Composition of Secondary Spectra	294
VI. Discussion	296
VII. Conclusions	298
References	299

Neutrino Physics*Leon M. Lederman*

I. Introduction	304
II. Theoretical Predictions	306
III. Experimental Matters	318
IV. Cosmic Ray Neutrinos	334
V. Experimental Results from Accelerators	339
VI. Experimental Outlook	357
References	361

Hypernuclear Physics

D. H. Davis and J. Sacton

I. Introduction	365
II. The Detection and Analysis of Hypernuclei	366
III. The Production of Hypernuclei	368
IV. The Binding Energies of Light Hypernuclei	379
V. Hypernuclear Spins	408
VI. Nonmesonic Decays	417
VII. Other Decay Modes	423
VIII. Lifetimes of Hypernuclei	426
IX. The Λ -Nuclear Potential Well-Depth	429
X. Double Hypernuclei and the Λ - Λ Interaction	432
XI. Hypernuclei and Nuclear Physics	440
XII. Other Hypernuclei	449
References	449
 AUTHOR INDEX	457
 SUBJECT INDEX	479