

Contents

Preface	v
I: Nuclear Physics	
1. Particle Physics, From Rutherford to the LHC <i>S. Weinberg</i>	3
2. The Early Years and Beyond <i>E. M. Henley and A. García</i>	11
3. 100 Years of Nuclear Mass Measurements and Models <i>G. T. Garvey</i>	33
4. Symmetries and Dynamical Symmetries in Nuclei <i>I. Talmi</i>	47
5. Nuclear Fission <i>R. Vogt and J. Randrup</i>	101
6. Parity- and Time-Reversal Tests in Nuclear Physics <i>D. Hertzog and M. J. Ramsey-Musolf</i>	155
7. High Energy Nuclear Physics: From Bear Mountain to the LHC <i>L. McLerran</i>	171
8. Chiral Symmetry in Subatomic Physics <i>U.-G. Meißner</i>	199
9. Exotic Nuclei Far From the Stability Line <i>K. Hagino, I. Tanihata and H. Sagawa</i>	231
II: Particles Physics	
10. A Short History of Colliders <i>L. Evans</i>	275

11. 4π Detectors <i>C. Tully</i>	289
12. Large Underground Detectors for Proton Decay and Neutrino Physics <i>K. Scholberg</i>	311
13. Jets and QCD <i>S. D. Ellis and D. E. Soper</i>	343
14. Diffractive Phenomena in High Energy Processes <i>L. Frankfurt and M. Strikman</i>	363
15. Weak Interactions: From Current–Current to Standard Model and Beyond <i>R. N. Mohapatra</i>	425
16. Neutrino Physics <i>L. Wolfenstein</i>	451
17. Introduction to Renormalization in Field Theory <i>L.-F. Li</i>	465
18. Lattice Gauge Theory and the Origin of Mass <i>A. S. Kronfeld</i>	493
19. String Theory and M-Theory <i>J. H. Schwarz</i>	519