

CONTENTS

VOLUME ONE

Preface	vii
Acknowledgments	xv
Summer School Organization	xvi
ACCELERATOR THEORY	
Circular Accelerators—Transverse	3
E. J. N. Wilson	
Longitudinal Motion in Circular Accelerators	44
F. T. Cole	
Computer Programs in Accelerator Physics	83
E. Keil	
Elementary Design and Scaling Considerations of Storage Ring Colliders	103
A. W. Chao	
Circular Machine Design Techniques and Tools	121
R. Servranckx and K. L. Brown	
Single-Particle Dynamics in Circular Accelerators	150
R. D. Ruth	
Introduction to the Nonlinear Dynamics Arising from Magnetic Multipoles	236
L. Michelotti	
Nonlinear Betatron Oscillations	288
B. Autin	
Space Charge Effects—Tune Shifts and Resonances	348
W. T. Weng	
Dynamic Aperture Calculations for Circular Accelerators and Storage Rings	390
D. R. Douglas	
Synchrobetatron Sideband Overlap in Electron-Positron Colliding Beams	474
A. L. Gerasimov, F. M. Izrailev, and J. L. Tennyson	
Introduction to the Dynamics of Area-Preserving Maps	534
R. S. MacKay	
Nonlinear Behavior: One Degree of Freedom	603
J. M. Greene	
Many-Dimensional Hamiltonian Systems	631
M. A. Lieberman	
Electromagnetic Fields: Impedances and Wakes	663
B. Zotter	
Modes of Storage Ring Coherent Instabilities	697
J. M. Wang	
Multiparticle Phenomena and Landau Damping	789
R. Talman	
Resonances in Accelerators	835
R. Talman	
Introductory Statistical Mechanics for Electron Storage Rings	864
J. M. Jowett	

Wakefield Effects in a Linear Collider	971
K. L. F. Bane	
Introduction to the Theory of Free Electron Lasers	1015
S. Krinsky	

VOLUME TWO

ACCELERATOR TECHNOLOGY

Ground Motion and Its Effects in Accelerator Design	1047
G. E. Fischer	
Iron Dominated Magnets	1120
G. E. Fischer	
Superconducting Magnets	1228
E. Willen, P. Dahl, and J. Herrera	
Specialty Magnets	1277
K. Halbach	
RF Systems: Waveguides and Cavities	1296
G. Dôme	
Dynamic Devices—Pickups and Kickers	1413
G. Lambertson	
Ultrahigh Vacuum Systems for Storage Rings and Accelerators	1443
N. B. Mistry	
Microwave Sources and Parameter Scaling for High-Frequency Linacs	1505
V. L. Granatstein and A. Mondelli	
A Look at Energy Compression as an Assist for High Power RF Production	1572
D. L. Birx, Z. D. Farkas, and P. B. Wilson	
Limiting Technologies for Particle Beams and High Energy Physics	1601
W. K. H. Panofsky	

PROTON-ANTIPROTON COLLIDER

The CERN p<bar>p> Project</bar>	1619
R. Billinge	
An Introduction to Stochastic Cooling	1628
S. van der Meer	
Antiproton Production and Accumulation	1650
E. J. N. Wilson	
RF for the CERN Proton-Antiproton Collider	1681
D. Boussard	
Performance Limitations of the SPS Collider	1722
L. R. Evans	