

Contents

Foreword, ix

Preface, xiii

Acknowledgments, xiv

PART A | PROGRAMS FOR MAGNETIC AND ELECTRIC FIELDS

1. Introduction, 1

Chapter I Two-Dimensional Magnetostatic Programs

2. Program TRIM, 15
3. Program LINDA, 39
4. Program NUTCRACKER, 63
5. Program MAREC, 74
6. Evaluations: TRIM, LINDA, NUTCRACKER, and MAREC, 86
7. Program GRACY, 91
8. University of Colorado Magnet Program, 93
9. Program COILS, 94

Chapter II Calculation of Electrostatic Fields

10. Program JASON, 102

Chapter III Three-Dimensional Magnetostatic Programs

11. Introduction, 114
12. Lawrence Berkeley Laboratory Magnet Program, 115
13. Carnegie Mellon Magnet Program, 118
14. University of Nevada Magnet Program, 118
15. CERN Magnet Program, 119
16. Program MAFCO, 119
17. Program FORCE, 129

PART B | ORBIT CALCULATION PROGRAMS

18. Introduction, 135

Chapter IV Programs Employing Matrix Formalism

19. Introduction, 138
20. Program TRANSPORT, 140
21. Program OPTIK, 164
22. Program TRAMP, 176
23. Program 4P, 188
24. Naval Research Laboratory Beam Transport Programs, 188
25. Program BOPTIC, 189
26. Program BEATCH, 189
27. Program SYTRAN, 190
28. CERN Beam Transport Programs, 190

Chapter V Programs Employing Integration of Equations of Motion

29. Introduction, 193
30. Program SOTRM, 194
31. Program TRAJECTORY, 203
32. Program GOC3D, 210
33. Program MAGOP, 223
34. Program MAFCOIII, 227
35. Program CYDE, 233
36. Program PINWHEEL, 246
37. Program SYNCH, 254
38. Program AGS, 264

PART C | LINEAR ACCELERATOR PROGRAMS

39. Introduction, 269

Chapter VI Programs for Linac Cavities

- 40. Program CURE, 270
- 41. Program JESSY, 279
- 42. Program MESSYMESH, 280
- 43. Program AZTEC, 281

APPENDIXES

- I Summary of Computer Programs That Solve the Nonlinear Partial Differential Equation for Magnetostatics in 2 Dimensions, 288**
- II Summary of Computer Programs That Solve the Partial Differential Equations for Magnetostatics in 3 Dimensions, 291**
- III Summary of Computer Programs That Use the Integral Equation Method, 292**

References, 293

Author Index, 301

Subject Index, 304