

TABLE OF CONTENTS

| | |
|--|-----|
| BRIEF REPORT ON "THE SECOND WORKSHOP ON LASER ACCELERATION OF PARTICLES" | |
| Lee C. Teng | 1 |
| REQUIREMENTS FOR THE VERY HIGH ENERGY ACCELERATORS | 8 |
| Burton Richter | |
| FUNDAMENTAL PHYSICS DURING VIOLENT ACCELERATIONS | 23 |
| Kirk T. McDonald | |
| HIGHLIGHTS OF THE WORKING GROUP ON PLASMA ACCELERATORS | 55 |
| John M. Dawson | |
| PLASMA ACCELERATORS | |
| T. Katsouleas, C. Joshi, J. M. Dawson, F. F. Chen, C. E. Clayton, W. B. Mori, C. Darrow and D. Umstadter | 63 |
| EXPERIMENTAL STUDY OF BEAT WAVE EXCITATION OF HIGH PHASE VELOCITY SPACE CHARGE WAVES IN A PLASMA FOR PARTICLE ACCELERATION | |
| C. Joshi, C. E. Clayton, C. Darrow and D. Umstadter | 99 |
| ELECTROMAGNETIC EFFECTS IN RELATIVISTIC ELECTRON BEAM PLASMA INTERACTIONS | |
| W. L. Kruer and A. B. Langdon | 114 |
| BEAT-WAVE ACCELERATOR STUDIES AT THE RUTHERFORD APPLETON LABORATORY | |
| J. D. Lawson | 120 |
| THE RUTHERFORD LABORATORY BEAT WAVE EXPERIMENT | |
| A. E. Dangor, A. Dymoke Bradshaw, R. Bingham, R. G. Evans, C. B. Edwards, W. T. Toner | 130 |
| EFFICIENCY FACTORS IN THE BEAT WAVE ACCELERATOR | |
| R. G. Evans | 134 |
| SOME NONLINEAR PROCESSES RELEVANT TO THE BEAT WAVE ACCELERATOR | 138 |
| R. Bingham, W. B. Mori and J. M. Dawson. | |
| MULTIPLE SCATTERING AND SYNCHROTRON RADIATION IN THE PLASMA BEAT-WAVE ACCELERATOR | |
| B. W. Montague and W. Schnell | 146 |
| EVOLUTION OF THE LASER BEAM ENVELOPE IN THE BEAT WAVE ACCELERATOR | |
| P. Sprangle and C. M. Tang | 156 |
| STUDY OF BEAT-WAVE GROWTH AND SATURATION | |
| T. Tajima and R. N. Sudan | 172 |

| | |
|--|-----|
| EFFECT OF NOISE AND PUMP DEPLETION ON THE PLASMA BEAT WAVE ACCELERATOR W. Horton and T. Tajima | 179 |
| DOUBLE BEAT-WAVE MECHANISM TO KEEP PARTICLES IN PHASE WITH ACCELERATING PLASMA WAVE Paul L. Csonka | 185 |
| RELATIVISTIC ELECTRON ACCELERATION BY NET INVERSE BREMSSTRAHLUNG IN A LASER-IRRADIATED PLASMA S. H. Kim and K. W. Chen | 190 |
| THE PLASMA WAKE FIELD ACCELERATOR Pisin Chen and J. M. Dawson | 201 |
| A COMPARISON OF THE PLASMA BEAT WAVE ACCELERATOR AND THE PLASMA WAKE FIELD ACCELERATOR Pisin Chen and Ronald D. Ruth | 213 |
| PLASMA WAKE FIELD ACCELERATION: A PROPOSED EXPERIMENTAL TEST J. B. Rosenzweig, D. B. Cline, R. N. Dexter, D. J. Larson, A. W. Leonard, K. R. Mengelt, J. C. Sprott, F. E. Mills, F. T. Cole | 226 |
| REPORT OF NEAR FIELD GROUP R. B. Palmer, N. Baggett, J. Claus, R. Fernow, I. Stumer, H. Figueiroa, N. Kroll, W. Funk, G. Lee-Whiting, M. Pickup, P. Goldstone, K. Lee, P. Corkum and T. Himel | 234 |
| GENERAL FEATURES OF THE ACCELERATING MODES OF OPEN STRUCTURES Norman M. Kroll | 253 |
| PRELIMINARY RESULTS ON OPEN ACCELERATING STRUCTURES R. B. Palmer and S. Giordano | 271 |
| A GRATING LINAC AT MICROWAVE FREQUENCIES Michael Pickup | 281 |
| SURFACE HEATING BY SHORT PULSES OF RADIATION Norman M. Kroll | 296 |
| ON ACCELERATION BY THE TRANSFER OF ENERGY BETWEEN TWO BEAMS J. S. Wurtele | 305 |
| PHASE AND AMPLITUDE CONSIDERATIONS FOR THE TWO-BEAM ACCELERATOR R. W. Kuenning, A. M. Sessler and J. S. Wurtele | 324 |
| A GAS-LOADED TRANSVERSE-FIELD ACCELERATOR M. A. Piestrup and J. A. Edighoffer | 329 |

| | |
|--|-----|
| LASER WIGGLER BEAT WAVE J. L. Bobin | 345 |
| REPORT OF THE WORKING GROUP ON OTHER ACCELERATION SCHEMES Andrew M. Sessler | 350 |
| INVERSE CHERENKOV ACCELERATION J. R. Fontana | 357 |
| THREE-WAVE ACCELERATOR AND HOW IT COMPARES WITH TWO-WAVE ACCELERATOR M. J. Abedi | 367 |
| TRANSVERSE ELECTRON RESONANCE ACCELERATOR Paul L. Csonka | 374 |
| LASER FOCUS ACCELERATOR BY RELATIVISTIC SELF-FOCUSING AND HIGH ELECTRIC FIELDS IN DOUBLE LAYERS OF NONLINEAR FORCE PRODUCED CAVITONS P. J. Clark, S. Eliezer, F. J. M. Farley, M. P. Goldsworthy, F. Green, H. Hora, J. C. Kelly, P. Lalousis, B. Luther-Davies, R. J. Stening and Wang Jin-Cheng | 380 |
| INCREASING THE CENTER OF MASS ENERGY OF STORAGE RINGS AND COLLIDERS BY LASERS R. Rossmanith | 390 |
| RADIAL IMPLOSION ACCELERATION P. J. Channell | 399 |
| LASER FOCUSING OF PARTICLE BEAMS P. J. Channell, C. J. Elliott and J. R. Fontana | 407 |
| SWITCHED POWER LINAC W. Willis | 421 |
| A PERIODIC PLASMA WAVEGUIDE F. T. Cole | 435 |
| IONIZATION FRONT ACCELERATOR: HIGH GRADIENTS, DEMONSTRATED PARTICLE ACCELERATION, AND A PROPOSED RELATIVISTIC ACCELERATOR C. L. Olson, C. A. Frost, E. L. Patterson, J. P. Anthes and J. W. Poukey | 443 |
| THE WAKEATRON: ACCELERATION OF ELECTRONS ON THE WAKE FIELD OF A PROTON BUNCH A. G. Ruggiero | 458 |

| | |
|--|-----|
| REPORT OF THE WORKING GROUP ON LASER TECHNOLOGY | 475 |
| S. Singer | |
| VERY HIGH POWER LASER PULSES | 493 |
| P. B. Corkum | |
| AN FEL-POWERED PARTICLE ACCELERATOR? | 505 |
| Jack Slater | |
| LASER TECHNOLOGIES FOR LASER ACCELERATORS | 518 |
| Dennis Lowenthal and Jack Slater | |
| THIN LAYERED INTERFERENCE MIRRORS TO REDUCE RADIATION DAMAGE | 544 |
| Paul L. Csonka | |
| ACCELERATOR TECHNOLOGY WORKING GROUP SUMMARY | 549 |
| R. A. Jameson | |
| LINEAR ACCELERATORS FOR TeV COLLIDERS | 560 |
| P. B. Wilson | |
| HIGH-BRIGHTNESS PHOTOEMITTER DEVELOPMENT FOR ELECTRON ACCELERATOR INJECTORS | 598 |
| J. S. Fraser, R. L. Sheffield and E. R. Gray | |
| QUANTUM EFFECTS IN LINEAR COLLIDER SCALING LAWS | 602 |
| T. Himel and J. Siegrist | |
| LIST OF PARTICIPANTS | 609 |