

I N D E X

Scientific Committee and supporting organizations	pag.	V
List of participants	»	VII

L E C T U R E S

Introduction	pag.	1
T. H. STIX: Plasma Heating by Neutral-Injection and Radiofrequency Methods	»	2
E. CANOBBIO: The RF-Heating Approach to Ignition in Low- β -Tori	»	6
T. CONSOLI: Survey on the RF-Heating Research on Toroidal Devices in U.R.S.S.	»	10
F. PARLANGE: TTMP Experiment on Petula	»	20
G. ICHTCHENKO: Wega Stellarator for RF-Heating Studies	»	24
M. PORKOLAB: A Survey of Experiments and Theory of Parametric Instabilities and Plasma Heating	»	28
M. PORKOLAB: Physical Mechanism of Parametric Instabilities near the Lower-Hybrid Frequency in Inhomogeneous Plasma	»	41
A. SAMAIN: Fast Compression Waves in the Ion Cyclotron Range	»	50
A. MESSIAEN: Bounded Plasma Aspects of the RF-Heating of Toroidal Machines	»	55
J. C. HOSEA: Fast and Slow Ion Cyclotron Wave Generation and Heating in the ST Tokamak	»	61
W. M. HOOKE: Ion Cyclotron Heating Results on the ST Tokamak	»	71
I. FIDONE: Linear Wave Conversion at the Lower Hybrid Resonance	»	74
I. FIDONE: Parametric Instabilities and Plasma Heating near the Lower Hybrid Frequency	»	76
G. LISITANO: Induced Vorticity in High Density Plasma	»	78
S. PURI: Absorption of the Lower-Hybrid Wave in Thermonuclear Plasma	»	83
H. DERFLER: Excitation of Plasma Waves by Gaps and Slow-Wave Structures	»	91
T. K. CHU, Y. C. LEE and M. PORKOLAB: Ion-Sound and Ion-Cyclotron Waves Parametrically Driven by a Pump Field above the Lower-Hybrid Resonance	»	102
T. H. STIX: Fast-Wave Heating of a Two-Component Plasma	»	105
M. BRAMBILLA and U. FINZI: Electro-Magnetic Eigenmodes of the Toroidal Cavity	»	110
M. BRAMBILLA: Theory of Slow Wave Coupling to the Lower Hybrid Resonance in Thermonuclear Devices	»	113
P. LALLIA: A LHR Heating Slow Wave Launching Structure Suited for Large Toroidal Experiments	»	120

M. BRUSATI, G. CIMA, M. FONTANESI and E. SINDONI: Lower Hybrid Resonance and Parametric Decay Instability Excited by a Slow Wave Device	pag. 123
K. D. HARMS, G. HASSELBERG and A. ROGISTER: Parametric Excitation of Electrostatic Instabilities by a Whistler Wave	» 125
M. BORNATICI: Fluid Picture of the Parametric Instability near the Lower Hybrid Frequency	» 127
M. MORESCO and E. ZILLI: Experimental Observations on the Interaction between a Low Frequency Instability and a RF Field near the Lower Hybrid Resonance	» 128
R. R. WEYNANTS: A High-Temperature, High-Density Reduction of Harmonic Ion-Cyclotron Heating Efficiency	» 130
D. R. SWEETMAN: Neutral Injecton Heating - an Introduction	» 134
D. R. SWEETMAN: Neutral injection as the primary heating source in toroidal systems	» 137
H. P. EUBANK: Neutral-Beam Heating in the Adiabatic Toroidal Compressor	» 141
L. A. BERRY: Neutral Injection Experiments on Ormak	» 147
L. A. BERRY: The Theory of Neutral Beam Injection	» 151
B. COPPI, R. POZZOLI, G. REWOLDT and T. SCHEP: Anomalous Transport Processes in High Temperature Toroidal Plasmas	» 155
B. COPPI, D. BHADRA and A. SLEEPER: Collective Modes in a Beam Injected Plasma	» 159
A. SAMAIN: Application of R.F. Pumping to Plasma Purification	» 166
E. CANOBBIO: A Possible Explanation of the RF-Induced Pumpout Observed on Low- β -Tori	» 174
S. YOSHIKAWA: Transport of Plasma and Energy	» 177
T. E. STRINGER: Diffusion Produced by Transit Time Magnetic Pumping	» 178
H. L. BERK, W. HORTON Jr., M. N. ROSENBLUTH and P. H. RUTHERFORD: Microinstability Theory for Toroidal Plasmas Heated by Intense Energetic Ion Beams	» 182
J. C. HOSEA: Ohmic Heating of Tokamaks	» 189
R. A. ELLIS Jr.: Adiabatic Compression of Toroidal Discharges	» 199
S. M. HAMBERGER: Turbulent Heating and Anomalous Conductivity	» 218
G. BARDOTTI, L. ENRIQUES and F. SANTINI: Current Build-up in a Plasma Discharge with a Moving Limiter	» 221
R. POZZOLI: Splitting of the Electron Population by the Electric Field in a Toroidal Plasma	» 225
C. J. H. WATSON: Heating and Injection Studies within the European Community	» 229
M. B. GOTTLIEB: Energy Needs and Energy Alternatives	» 236
T. K. CHU and L. C. JOHNSON: Interaction of CO ₂ Laser Radiation with Weakly Underdense Plasmas in a Strong Magnetic Field	» 238
J. H. GARDNER, N. K. WINSOR, C. E. WAGNER and J. P. BORIS: Numerical Fokker-Planck Studies of Two Component Tori	» 244
D. L. JASSBY: Alpha-Particle Heating of Tokamak Plasmas	» 259
F. BOTTIGLIONI, J. COUTANT and M. FOIS: Heating of Toroidal Devices by means of Cluster Injection	» 263
T. K. CHU: Summary of the Third « Varenna Conference »	» 266