

CONTENTS

SESSION : VACUUM AND SURFACE EFFECTS

Chairman : G. M. Mc CRACKEN

All metal liner for R. F. Heating	1
T. CONSOLI, G. JEFFROY, S. NAGAO, S. ZYMANSKI	
Energy feed back in a high amplitude travelling wave plasma accelerator	13
W. BIEGER, A. COSLER, H. GRESSER, F. RICHTER, H. TUCZEK	
The Hall accelerator as a fusion reactor divertor simulator	21
H. C. COLE, G. M. Mc CRACKEN, A. J. TRAVIS, S. K. ERENTS, J. W. WILL	
Sputtering in a fusion reactor as a function of total energy and temperature of the particles bombarding the wall	27
R. BEHRISCH, H. VERNICKEL	
Surface effects in thermonuclear devices and reactors	41
M. KAMINSKY	

SESSION : PROCESSING AND EXPERIMENTAL DATA

Chairman : A. M. VAN INGEN

Report on Interferometry and Polarimetry (3 papers presented by D. VERON)	
A stabilized He-Ne-laser interferometer with high resolution and large bandwidth ...	51
K. V. WEISBERG	
A ten channels microwave interferometer for electron density measurement in T. F. R. Tokomak.....	57
J. P. CRENN	
High Sensitivity H. C. N. Interferometer Application to T. F. R.	63
P. BLANC, D. VERON	
On the experience gained with a high speed data acquisition system	69
W. HOPMANN, P. W. HUTTEMANN, G. WAIDMANN	

A computer based data processing system for fusion experiments	77
E. G. MURPHY, K. FULLARD, C. A. STEED	
System aspects of data acquisition at Culham	83
M. CALDERBANK, A. H. READ	
Mass spectrometric Knudsen effusion measurements of vapor species in the system Lithium-Hydrogen	89
H. R. IHLE, C. H. WU	

SESSION : BLANKET TECHNOLOGY

Chairman : K. H. SCHMITTER

INVITED PAPER

The Development of Fusion Reactor Technology	99
R. HANCOX	
Neutron flux asymmetry in toroidal geometries	107
W. DANNER	
A modular fusion reactor blanket system with heat-pipes and helium cooling	113
G. BEGHI, K. A. BUSSE, G. CASINI, F. FARFALETTI-CASALI, P. FIEBELMANN, F. PETER, J. REYNEN, G. VOLTA	
Comparison of direct and indirect cooling of fusion reactor blankets containing lithium	125
J. T. D. MITCHELL, J. A. BOOTH	
Lithium and flibe as coolant for fusion reactor blankets	131
W. DANNER	
Neutron-induced implantation of coolant atoms into blanket materials for fusion reactors	137
F. K. ALTENHEIN, H. ANDRESEN, Ch. DONNER, W. LUTZE, H. MIGGE	
Comparison of technological problems in Stainless Steel fusion reactor blankets and fast breeder reactor cores	143
W. H. KOHLER	
An experimental study of hydrogen in liquid lithium	151
G. M. Mc CRACKEN, D. H. J. GOODALL	
Tritium separation and recovery system using a fluidized bed	157
H. WEICHSELGARTNER	

INVITED PAPER

Why Fusion in European Community	169
Professor PALUMBO	

SESSION : SYSTEM STUDIES

Chairman : C. G. FAIRCLOUGH

Construction of a thin-walled alumina torus surrounded by copper shields	183
J. W. A. ZWART	
Scyllac, eighteen months later	189
C. F. HAMMER, H. W. HARRIS, W. E. QUINN, G. A. SAWYER, K. S. THOMAS, E. L. KEMP	
Technical aspects of future toroidal high-beta experiments	195
E. BREIT, J. E. GRUBER, A. KNOBLOCH	
The Frascati Tokomak, design information	207
THE TOKOMAK DESIGN GROUP, read by R. TOSCHI	
The design and installation of the Garching Tokomak facility Pulsator I.	213
R. ALLGEYER, G. BAUMLER, J. GERNHARDT, G. HERPICH, W. JAKOBUS, F. KERL, O. KLUBER, A. KNOBLOCH, H. LOHNERT, Ch. LUDESHER, R. POLCHEN, H. ROOS	
A large 100 MW Pulsed Magnetic Coil for fusion Research M. HUGUET, P. H. REBUT, A. TOROSSIAN, M. MEIER	
Production of pulsed high magnetic fields with rotating machine	221
P. H. REBUT, A. TOROSSIAN, J. DELASSUS, M. DELAUNAY	
The design of CLEO Stellarator/Tokomak	233
K. M. PLUMMER, B. C. SANDERS, P. MILLWARD, R. R. HUNT, D. E. SKELTON, D. V. BAYES, J. HAY	
Technical status report on the Garching Stellarator Wendelstein VII	239
M. BLAUMOSER, K. FREUDENBERGER, G. GRIEGER, R. JAENICKE, J. JUNKER, A. KNOBLOCH, J. KOLOS, R. C. KUNZE, H. LOHNERT, B. OSWALD, R. POLCHEN, B. STREIBL, H. WOBIG, G. A. WOLF	
The Culham superconducting Levitron. Engineering design	251
S. SKELETT	

Design considerations for divertors in toroidal fusion reactors	257
F. H. TENNEY, G. LEWIN	
SESSION : PLASMA HANDLING AND CONTROL	
Chairman : B. RUMI	
An 8MW amplifier with 1 microsec risetime for plasma stabilization	263
G. E. S. HARDING, J. H. ANDERSON	
Cryogenic experimental device for production of solid pellets	267
M. TANIMOTO	
Fast neutral injectors for the Culham superconducting Levitron	273
P. BURROWS, P. COLLINS, J. COUPLAND, D. P. HAMMOND, A. C. RIVIERE	
Inreaction of high energy hydrogen ions with hydrogen clusters	279
H. D. FALTER, P. R. W. HENKES	
SESSION : MAGNET FOR DC AND QUASI DC DEVICES	
Chairman : F. J. FRIEDRICH	
On a superconducting coil system for a large Tokomak experiment	285
A. P. MARTINELLI	
The structural design problems of large superconducting magnets for toroidal reactor system	297
H. J. CRAWLEY	
Transmission of forces through a cryostat	303
P. GIANESE, E. PORROT, G. REY, B. TAQUET	
Influence of radiation damage to superconducting Nb, Ti coils for fusion reactors	311
M. SOLL	
The properties of the aircore transformer in Tokomaks	319
D. C. SCHRAM, J. REM, R. J. TAYLOR, D. B. MONTGOMERY, A. HUGENHOLTZ, E. MINARDI, L. Th. ORNSTEIN	
Calculation of net forces and mechanical stress in the toroidal field coil system of the Wendelstein VII and Pulsator	323
R. POLCHEN, Ch. LUDESCHER	
Magnetic forces on the helical windings of a Stellarator and the resulting deformation of the supporting	333
B. STREIBL	

A Stellarator coil system without helical windings	345
H. WOBIG, S. REHKER	
Ring position control for Levitron	359
J. R. LAST	
Response time considerations of SCR controlled magnet power supply	365
A. MIYAHARA, Y. KUBOTA, K. MATSUURA, H. M. SAAD	
SESSION : PULSED MAGNET TECHNOLOGY	
Chairman : B. TAQUET	
Report on SWITCHES	
(3 papers, presented by T. E. JAMES)	
Switch system for high-beta experiments	373
G. KLEMENT, H. WEDLER	
A combined arc and metal-to-metal switch with low resistance and accurate switching time	381
P. DOKOPOULOS, M. LOCHTER, F. WAELBROECK	
Statistical performance data for high current 60KV spark gap switch	389
R. A. BURDEN, T. E. JAMES	
A fast, capacitive, energy, storage system with passive crowbar and non-linear damping resistors	395
A. JERZYKIEWICZ	
The generation of a square pulse current for sustained theta-pinch experiments	403
N. IKEDA	
Improvements in the design of line pulse generators	411
A. LIETTI	
A 120 KJ flexible z-theta device for experiments on axisymmetric toroidal high-beta plasma	417
P. L. MONDINO, R. ROSTAGNI	
Operating characteristics of spark-gaps and bank assembly for an electron ring accelerator experiment	423
R. SUSS, G. MULLER	
Pulse transformer with variable voltage from 17 to 95 KV for a 1 MJoule capacitor bank	431
P. DOKOPOULOS, W. KOHLHAAS, R. LEMMENS, C. STICKELMANN, F. WAELBROECK, U. BRAUNSBERGER, U. SCHWARZ	

Inductive energy storage systems applied for the extension of current pulse-duration of capacitor banks	441
J. SALGE, U. BRAUNSBERGER	
Protection of capacitor banks against damages due to unintentional break-downs	447
P. DOKOPOULOS, A. LIEDTKE	
Experimental study of high current fast switch	453
F. DAMIDAU, A. DELMAS, L. HOCHARD, C. RIOUX	
The feasibility of large capacitor banks storing about 100 Megajoules	461
T. W. HUNT, T. E. JAMES	
 LIST OF PARTICIPANTS	 467