CONTENTS

VOLUME II

Chapter 10 Laser Fusion

"Potential Lasers for LCTR Applications." J. S. Gilbert, T. F. Stratton, and R. J. Jensen (Los Alamos Scientific Laboratory)			•	3
"Laser Systems for Laser Fusion." R. R. Buntzen and C. K. Rhodes (Lawrence Livermore Laboratory)		•	•	13
"Recent Results of Laser Induced Fusion Tests at KMS Fusion." Henry J. Gomberg and George Charatis (KMS FUSION, Inc.)	• •	•	•	25
"Methods of Determining ρR in Laser Fusion Experiments Using Neutron Diagnostics." H. D. Campbell and F. H. Southworth (University of Florida)	•	•	•	36
"Neutron Diagnostics for Laser-Induced Fusion." F. H. Southworth and H. D. Campbell (University of Florida)			•	45
"Direct Conversion of Neutron Energy and Other Advantages of a Large Yield per Pulse, Inertial-Confinement Fusion Reactor." R. J. Burke and J. C. Cutting (Argonne National Laboratory)		•	.•	53
"Some Reactor Concepts Based on the Laser Heated Solenoid." Loren C. Steinhauer and Peter H. Rose (Mathematical Sciences Northwest, Inc.)		•	•	63
Chapter 11 Neutronics				
"Tritium Breeding in Ceramic Lithium-Compound Blanket." Yasushi Seki, Kiyoshi Sako, Kichizo Tanaka, and Toru Hiraoka (Japan Atomic Energy Research Institute, Japan)		•	•	77
"Neutronics and Photonics Study of Fusion Reactor Blankets." M. A. Abdou and C. W. Maynard (University of Wisconsin)		•		87
"Some Neutronic Aspects of Laser-Fusion Reactors." T. Frank, D. Dudziak, and E. Heck (Los Alamos Scientific Laboratory)		•		101
"Transmutation and Atom Displacement Rates in a Reference Theta-Pinch Reactor." Donald J. Dudziak (Los Alamos Scientific Laboratory)		•		114

"Blanket Design and Cross-Section Sensitivity Calculations Based on Perturbation Methods." S. A. W. Gerstl (Argonne National Laboratory)	136
"Tritium Breeding Potential of the Princeton Reference Fusion Power Plant." Ehud Greenspan and William G. Price, Jr. (Princeton University)	145
"Use of Tantalum and Liquid Lead in a Fusion Reactor Blanket." W. G. Davey, C. L. Beck, and R. G. Palmer (Argonne National Laboratory); E. Parish (Babcock & Wilcox Company)	155
"Sensitivity of Neutron Multigroup Cross Sections to Thermal Broadening of the Fusion Peak." D. W. Muir (Los Alamos Scientific Laboratory)	166
"Effect of Be(n,2n) Multigroup Treatment on Theta-Pinch Blanket Nucleonics." Patrick D. Soran, Donald J. Dudziak, and Douglas W. Muir (Los Alamos Scientific Laboratory)	172
"Cross-Section Sensitivity of Tritium Breeding in Fusion Reactor Blankets." Melvin Tobias and Don Steiner (Oak Ridge National Laboratory)	185
"Integral Neutronics Experiments on a Lithium Metal Assembly." Toru Hiraoka, Hiroshi Maekawa, Yasushi Seki, and Jitsuya Hirota (Japan Atomic Energy Research Institute, Japan)	193
"Neutron Fermi Age in Graphite from Fission and Fusion Sources to Indium Resonance." Moshe Etzion, E. Linn Draper, Jr., Steven P. Nichols, and William G. Davey (University of Texas at Austin)	202
"Measured and Evaluated Fast Neutron Cross Sections of Nickel and Cobalt." A. Smith, P. Guenther, D. Smith, and J. Whalen (Argonne National Laboratory)	218
"Services to the CTR Community by the Radiation Shielding Information Center." R. W. Roussin, D. K. Trubey, and B. F. Maskewitz (Oak Ridge National Laboratory)	227
"Nuclear Blanket and Shielding Problems in Demonstration Fusion Reactors." G. Casini and R. Cuniberti (J.R.C EURATOM, Ispra, Italy)	238
Chapter 12 Plasmas	
"Conceptual Design of Open System Reactor with RF Plugging." T. Hatori, S. Hiroe, A. Miyahara, T. Sato, K. Takayama, T. Watanabe, and T. Watari (Nagoya University, Japan) (Invited Paper)	253
(Invited Paper)	233

"Magnetic Field Studies for a Proposed Technical Feasibility Tokamak Reactor." S. Bobbio, E. Coccorese, and O. Greco (Universita di Napoli, Italy); F. Esposito (Laboratorio di Cibernetica, Arco Felice, Italy)	265
"Helical-Field and Conducting-Shell Feedback Stabilization of Toroidal Theta Pinch." Benjamin M. Ma (Iowa State University)	276
"Impurity and Injection Energy Effects on Toroidal Reactor Dynamics." T. Kammash and D. L. Galbraith (University of Michigan)	289
"Thermal Instabilities for Different Fusion Fuel Cycles." John L. Usher and Hugh D. Campbell (University of Florida)	301
"Ignition, Fuelling and Shutdown of a D-T Fusion Plasma." Harumi Yamato and Mitsuru Ohta (Japan Atomic Energy Research Institute, Japan)	309
"Computer Controlled Feedback Stabilization of an MHD Plasma Instability." G. Merckel (International Business Machines Corporation)	320
"A High Current Relativistic Electron Beam Accelerator for Fusion Applications." C. B. Dobbie, V. Fargo, A. C. Kolb, P. Korn, D. A. Phelps, and A. Ramrus (Maxwell Laboratories, Inc.)	337
"Plasma-Wall-Interaction in Magnetically Confined Toroidal Fusion Reactors — Status and Problems." H. Vernickel (Max-Planck-Institut für Plasmaphysik, EURATOM-Association, West Germany) (Invited Paper)	347
"Stabilizing Control of D-T Fusion Systems." A. A. El-Bassioni and A. A. Husseiny (Carnegie-Mellon University)	355
"Optimum Fuel Composition for Equilibrium CTR Operations." S. L. Gralnick and F. H. Tenney (Princeton University)	364
"Conceptual Design Considerations for D-T Mirror Reactors With and Without a Fission Blanket." $R.\ W.\ Moir$ (Lawrence Livermore Laboratory)	373
"Transport Calculations for D-T Burning Tokamak Reactors." Weston M. Stacey, Jr. (Argonne National Laboratory)	390
"Energetic Particle Loss and Field Bumpiness Due to "D" Shaped Coils in a Tokamak Reactor." T. F. Yang and G. A. Emmert (University of Wisconsin)	400
"Self-Purification of Thermonuclear Plasmas." Zeinab A. Sabri (Iowa State University of Science and Technology)	407
"A Tetrahedrally Symmetric Magnetic Well for Target Plasma Reactors." A. Valfells, Z. Sabri, B. Ma, and Y. C. Chiu (Iowa State University of Science and Technology)	413
"Feasibility Studies of Gas Insulation Nuclear Fusion Reactors." S. Shioda (Tokyo Institute of Technology, Japan)	423
v	

Chapter 13 Materials

"Fusion Reactor Applications of Silicon Carbide and Carbon." G. R. Hopkins (General Atomic Company)	437
"Dielectric Breakdown of Potential RTPR First Wall Insulator Materials." James M. Bunch and Frank W. Clinard, Jr. (Los Alamos Scientific Laboratory)	448
"The Tensile Fatigue Behavior of Molybdenum at 1153 K." Ronald A. Yeske, Walter V. Green, and Eugene G. Zukas (Los Alamos Scientific Laboratory)	456
"A Summary of the Physical and Material Constraints on the Performance of Toroidal Magnets for Controlled Thermonuclear Reactors." D. W. DeMichele and J. B. Darby, Jr. (Argonne National Laboratory)	462
"Influence of Nonmetallic Elements on the Compatibility of Lithium with Fusion Reactor Materials." D. L. Smith and K. Natesan (Argonne National Laboratory)	473
"Potential Effects of Interactions Between Transmutants and Displaced Atoms in Controlled Thermonuclear Reactor First Walls." G. R. Odette and M. W. Frei (University of California, Santa Barbara)	485
"High Density Damage in Al_20_3 by Low Energy Proton Implantation." $G.\ W.\ Arnold$ (Sandia Laboratories, Albuquerque)	500
"Erosion of Silicon Carbide Surfaces under Helium Ion and 14 MeV Neutron Irradiations." M. Kaminsky and S. K. Das (Argonne National Laboratory)	508
"Formation of Surface Features on Niobium During High Temperature Hydrogen Irradiation." W. Bauer and G. J. Thomas (Sandia Laboratories, Livermore)	517
"Helium and Hydrogen Isotope Depth Profiles and Migration in CTR Materials." Robert S. Blewer (Sandia Laboratories, Albuquerque)	525
"Helium Doping of Niobium with Tritium." R. G. Hickman (Lawrence Livermore Laboratory)	535
APPENDIX	
List of Participants	547