

## AUTHORS — NOVEMBER 1983

PLASMA ENGINEERING

### ELECTRON TRANSPORT IN ONE-DIMENSIONAL PLASMAS

*B. R. Wienke*

**B. R. Wienke** (PhD, theoretical physics, Northwestern University, 1970) has been a section leader for computational physics in the Computing Division of Los Alamos National Laboratory since 1981. His interests lie in the areas of charged-particle transport and computational physics methods. He is a developer of  $S_n$  methods for charged-particle transport applications.



### PROPOSED SCENARIO FOR BURN CONTROL IN TOKAMAK REACTOR

*Arrigo Sestero*

**Arrigo Sestero** (laurea cum laude, physics, University of Pavia, Italy, 1958) is currently director of the Magnetic Confinement Theory Unit of the ENEA-EURATOM Association in Frascati, Italy. He joined his present employer in 1964, having previously been (from 1961 to 1964) research associate in the Courant Institute of Mathematical Sciences of New York University, under contract with the U.S. Atomic Energy Commission. In 1970 he received the libera docenza in plasma physics from the University of Rome. At the latter university he taught plasma physics in the local post-graduation school during the academic years from 1969/1970 to 1976/1977. His main areas of interest are plasma physics and fusion physics.



### A NUCLEAR DIAGNOSTIC FOR FAST ALPHA PARTICLES

*Larry R. Grisham  
Douglass E. Post  
John M. Dawson*

**Larry R. Grisham** (top) (PhD, physics, Oxford University) has been a physicist at the Princeton Plasma Physics Laboratory (PPPL) since 1974. He has worked mainly in the application and development of neutral beam heating for magnetically confined plasmas. **Douglass E. Post** (center) (PhD, physics, Stanford University) has been a physicist at the PPPL since 1975. He has worked primarily in the computational modeling of tokamaks and the application of atomic processes to fusion research. **John M. Dawson** (bottom) (PhD, physics, University of Maryland) is director of the Center for Plasma Physics and Fusion Engineering at the University of California, Los Angeles (UCLA). Before coming to UCLA, he was a physicist at PPPL from 1956-1973, where he was head of the Theoretical Group from 1966-1973. His interests include controlled thermonuclear fusion, computer simulation of plasmas, radiation from plasmas, and kinetic theory of plasmas and transport in plasmas. In 1977 he was elected to the National Academy of Science and he was awarded the James Clerk Maxwell Prize in Plasma Physics. He



has also been awarded the TRW Systems Exceptional Scientific Achievement Award, and in 1978 he was named California Scientist of the Year.

### HELIUM-COOLED SOLID BREEDER BLANKET DESIGN FOR A TOKAMAK FUSION REACTOR

*Max Huggenberger  
Kenneth R. Schultz*

**Max Huggenberger** (top) (BS, mechanical engineering, Lucerne State College of Engineering, 1968) is a member of the Thermal-Hydraulics Division at the Swiss Federal Institute for Reactor Research. He worked for ten years in the experimental and analytical areas of gas-cooled fast breeder reactor core thermal hydraulics. His current interests are concentrated on the thermal-hydraulic problems involved in the cooling of the fusion reactor first wall and blanket. **Kenneth R. Schultz** (PhD, nuclear engineering sciences, University of Florida, 1971) is a manager of fusion development and technology at GA Technologies. He is responsible for the fusion nuclear technology aspects of several reactor design study projects for tokamak, mirror, and inertial confinement reactor applications, with emphasis on blanket engineering. He also is involved with several small blanket technology experiments.



### EFFECT OF BLANKET STRUCTURE ON TRITIUM BREEDING RATIO IN FUSION REACTORS

*Koichi Maki  
Takashi Okazaki*

**Koichi Maki** (top) (BS, nuclear engineering, Tokyo University, Japan, 1968; MS, nuclear engineering, Kyoto University, Japan, 1971) is a researcher at Energy Research Laboratory, Hitachi, Ltd. He worked in fields of nuclear force and fast reactor physics. His research interests are neutronics and plasma transport simulation in fusion reactors. **Takashi Okazaki** (Dr. Science, physics, Waseda University, Japan, 1980) is a researcher at Energy Research Laboratory, Hitachi, Ltd. He worked in the fields of nonlinear oscillations and relativistic electron beam for plasma physics. His current interests include radio-frequency plasma heating, current drive, and neutronics in fusion reactors.



### A HEAT PIPE CONCEPT FOR COOLING A LIQUID-POOL BLANKET OF A TANDEM MIRROR FUSION REACTOR

*Nancy L. Schwertz  
Myron A. Hoffman*

**Nancy L. Schwertz** (top) (BS, engineering science, Trinity University, 1980; MS, mechanical engineering, University of California, Davis, 1982) joined Lawrence Livermore National Laboratory's Advanced Laser Isotope Separation (AVLIS) Group in July 1982. She has had experience both in undergraduate and graduate research developing computer models for thermal analysis. She is currently working along those same lines providing analysis and design information for the AVLIS project. **Myron A. Hoffman** [ScD, Massachusetts Institute of Technology (MIT), 1955] taught at MIT from 1959 to 1968. He spent two years at the Italian Ionized Gas Laboratory in Frascati (1966-1967 and 1972-1973), where he worked on magnetohydrodynamic power generation and tokamak reactor conceptual design studies. He joined the Department of Mechanical Engineering at the University of California at Davis as a professor of mechanical engineering in 1968, where his current major research interests are in heat transfer and fusion reactor technology.



### DOSE RATES FROM INDUCED ACTIVITY IN THE ELMO BUMPY TORUS PROOF-OF-PRINCIPLE DEVICE

**R. G. Alsmiller Jr.** (top) (PhD, University of Kansas, 1957) is leader of the Applied Physics and Fusion-Reactor Analysis Group of the Engineering Physics Division at Oak Ridge National Laboratory (ORNL). For several years he has directed the theoretical research in this division in the areas of high energy nuclear reactions, high energy nuclear transport, and fusion reactor neutronics. **R. T. Santoro** (center) (MS, University of Tennessee, 1967) is a member of the Engineering Physics Division at ORNL. His current interests are in neutron transport and neutron interactions with matter related to fusion reactor design. He is currently involved in the neutronic investigations of reactor blanket and shield design, neutron beam injectors, radiation streaming from penetrations, radiation effects in materials, and the analysis of integral experiments for fusion reactor shields. **J. Barish** (deceased). **J. M. Barnes** (bottom) (BS, University of Arkansas, 1965) is a member of the Computer Sciences Division at ORNL. He is involved in the neutronic analysis of fusion reactor blankets and shields, neutral beam injectors, radiation effects in materials, and the analysis of integral experiments for fusion reactor shields.

*R. G. Alsmiller, Jr.  
R. T. Santoro  
J. Barish  
J. M. Barnes*



### ANALYSIS OF PUMPING REQUIREMENT FOR EXHAUSTING DUCT IN CLOSE VICINITY OF DIVERTOR IN TOKAMAK REACTOR

**Seiji Saito** (top right) (PhD, physics, Waseda University, Japan, 1978) is a research scientist in Energy Research Laboratory, Hitachi, Ltd. He has participated in the conceptual plasma design work of the Fusion Experimental Reactor (FER) at Japan Atomic Energy Research Institute (JAERI) during the past two years. His recent research interest is in impurity control problems of a fusion reactor. **Masayoshi Sugihara** (top left) (BS, instrumentation engineering, 1969; PhD, Keio University, Japan, 1977) is a research scientist in the Division of Large Tokamak Development at JAERI. His work has been in the area of plasma design and analysis of tokamak fusion reactors. His interests are in conceptual plasma design of FER/INTOR and in the development of analysis codes for related plasma physics. **Nobol Fujisawa** (center right) (BS, electrical engineering, 1963; PhD, Nagoya University, Japan, 1971) is principal scientist in the Division of Large Tokamak Development at JAERI. He worked on JFT-2 and Doublet III. He is now engaged in the plasma design of FER. **Koju Ueda** (bottom left) (BS, nuclear physics, University of Tohoku, Japan, 1962) is a senior engineer in Mitsubishi Electric Co. His interest has been in plasma equilibrium, poloidal field configuration, and vertical position control of elongated plasma in tokamak reactors. **Tetsuya Abe** (bottom right) (PhD, applied chemistry, Hokkaido University, Japan, 1976) is a senior scientist at the Plasma Engineering Laboratory of JAERI. He has been engaged in vacuum technology research relative to surface cleaning of vacuum wall and first-wall material development in fusion research since 1976.

*Seiji Saito  
Masayoshi Sugihara  
Nobol Fujisawa  
Koju Ueda  
Tetsuya Abe*



**EFFECTS OF GAMMA EMISSION ON LASER IONIZED PLASMA CHANNELS FOR INERTIAL CONFINEMENT FUSION REACTORS**

*Ronald M. Gilgenbach  
Lorne D. Horton  
Otho E. Ulrich*

**Ronald M. Gilgenbach** (top) (BS, 1972, and MS, 1973, University of Wisconsin; PhD, Columbia University, 1978) has been an assistant professor of nuclear engineering at the University of Michigan since 1980. His current research concerns high-power laser interactions with dense plasma and particle beam transport in inertial confinement fusion reactors. From 1978 through 1980 he was employed by JAYCOR under contract to the U.S. Naval Research Laboratory. There Dr. Gilgenbach developed a long-pulse 35-GHz gyrotron, which he used at Oak Ridge National Laboratory to perform the first electron cyclotron heating experiment on a tokamak in the United States. **Lorne D. Horton** (bottom) (BASc, engineering science, University of Toronto, 1981; MS, nuclear engineering, University of Michigan, 1982) is a graduate student at the University of Michigan in the Department of Nuclear Engineering. He is the recipient of a post-graduate scholarship from the Natural Sciences and Engineering Research Council of Canada. **Otho E. Ulrich** (photo not available) (BS, Tri-States University, 1974) has been a graduate student in nuclear engineering at the University of Michigan since 1980. He is currently employed by KMS Fusion.

