## Fusion Grahmology

## CONTENTS / JULY 1999-VOL. 36, NO. 1

## **TECHNICAL PAPERS**

- 1 Back to the Future: The Historical, Scientific, Naval, and Environmental Case for Fission Fusion / *Wallace Manheimer*
- 16 Physics Design of the National Spherical Torus Experiment / Stanley M. Kaye, Masayuki Ono, Yueng-Kay Martin Peng, Donald B. Batchelor, Mark D. Carter, Wonho Choe, Robert Goldston, Yong-Seok Hwang, E. Fred Jaeger, Thomas R. Jarboe, Stephen Jardin, David Johnson, Robert Kaita, Charles Kessel, Henry Kugel, Rajesh Maingi, Richard Majeski, Janhardan Manickam, Jonathan Menard, David R. Mikkelsen, David J. Orvis, Brian A. Nelson, Franco Paoletti, Neil Pomphrey, Gregory Rewoldt, Steven Sabbagh, Dennis J. Strickler, Edmund Synakowski, James R. Wilson
- 38 Density Limits for Multifaceted Asymmetric Radiation from the Edge / *Weston M. Stacey*
- **47** Experimental Investigation and Theoretical Analysis of Two-Dimensional Magnetohydrodynamic Effects in a Rectangular Duct / *Zengyu Xu, Chuanjie Pan, Wenhao Wei, Xiaoqiong Chen, Yanxu Zhang, Wenzhong Li*
- 52 Effect of Shielding Design Margin on the Quantity of Fusion Reactor Material / Koichi Maki, Chikara Konno, Fujio Maekawa, Hiroshi Maekawa, Katsumi Hayashi, Kobun Yamada
- 62 Simulation of a Nonideal Saddle Coil on Toroidally Symmetrical Magnetic Confinement Experiments / *Ralph Ewig, Thomas R. Jarboe*
- **69** Initial Free Surface Instabilities on a High-Speed Water Jet Simulating a Liquid-Metal Target / *Kazuhiro Itoh, Yoshiyuki Tsuji, Hideo Nakamura, Yutaka Kukita*
- **85** Steady Inductive Helicity Injection and Its Application to a High-Beta Spheromak / *Thomas R. Jarboe*
- **92** Application of High-Temperature Superconductors to Enhance Nuclear Fusion Reactors / *Tetsuya Uchimoto, Kenzo Miya*

## **DEPARTMENTS**

- 104 Meeting Report
  - Summary of the Joint Varenna-Lausanne International Workshop on the Theory of Fusion Plasmas, Villa Monastero, Varenna, Italy, August 31–September 4, 1998 / *Massimiliano G. Romé*
- 107 Book Reviews

Instabilities in a Confined Plasma / reviewed by Jesús J. Ramos

World Survey of Activities in Controlled Fusion Research, 1997 Edition / reviewed by *George Miley*