

CONTENTS OF VOL. II

TOKAMAK EXPERIMENTS II (Session I)

High-power ICRF and ICRF plus neutral-beam heating on PLT (IAEA-CN-41/I-1)	3
<i>D. Hwang, M. Bitter, R. Budny, A. Cavallo, R. Chrien, S. Cohen, P. Colestock, C. Daughney, S. Davis, D. Dimock, P. Efthimion, H. Eubank, D. Gambier, R. Goldston, D. Herndon, E. Hinnov, J. Hosea, J. Hovey, R. Kaita, D. Manos, E. Mazzucato, D. McNeill, D. Mikkelsen, D. Mueller, A.L. Pecquet, D. Post, G. Schilling, C. Singer, J. Strachan, S. Suckewer, H. Thompson, S. von Goeler, J. Wilson</i>	
Discussion	15
Dominant role of wave conversion mechanism in TFR ion cyclotron heating experiments (IAEA-CN-41/I-2)	17
<i>Equipe TFR</i>	
Discussion	25
Energy and impurity transport in the Alcator C tokamak (IAEA-CN-41/I-3)	27
<i>B. Blackwell, C.L. Fiore, R. Gandy, A. Gondhalekar, R.S. Granetz, M. Greenwald, D. Gwinn, E. Källne, J. Källne, S.E. Kissel, B. Lipschultz, N.G. Loter, E.S. Marmor, S. McCool, D. Overskei, D.S. Pappas, R.R. Parker, R. Petrasso, M. Pickrell, P.A. Politzer, M. Porkolab, P. Pribyl, J.E. Rice, F. Seguin, J.J. Schuss, J.L. Terry, R. Watterson, S.M. Wolfe</i>	
Discussion	39
Lower-hybrid heating experiments in the Frascati tokamak (FT) (IAEA-CN-41/I-4)	41
<i>F. Alladio, M.L. Apicella, E. Barbato, G. Bardotti, R. Bartiromo, F. Bombarda, G. Bracco, G. Buceti, P. Buratti, R. de Angelis, F. de Marco, M. de Pretis, D. Frigione, M. Gasparotto, R. Giannella, M. Grolli, M. Haegi, A. Mancuso, V. Merlo, V. Pericoli, L. Pieroni, S. Podda, E. Purchi, J.P. Rager, G.B. Righetti, F. Romanelli, F. Santini, S.E. Segre, T. Tanga, A. Tuccillo, O. Tudisco, J. Wells, V. Zanza</i>	
Discussion	49

EDITORIAL NOTE

The papers and discussions have been edited by the editorial staff of the International Atomic Energy Agency to the extent considered necessary for the reader's assistance. The views expressed and the general style adopted remain, however, the responsibility of the named authors or participants. In addition, the views are not necessarily those of the governments of the nominating Member States or of the nominating organizations.

Where papers have been incorporated into these Proceedings without resetting by the Agency, this has been done with the knowledge of the authors and their government authorities, and their cooperation is gratefully acknowledged. The Proceedings have been printed by composition typing and photo-offset lithography. Within the limitations imposed by this method, every effort has been made to maintain a high editorial standard, in particular to achieve, wherever practicable, consistency of units and symbols and conformity to the standards recommended by competent international bodies.

The use in these Proceedings of particular designations of countries or territories does not imply any judgement by the publisher, the IAEA, as to the legal status of such countries or territories, of their authorities and institutions or of the delimitation of their boundaries.

The mention of specific companies or of their products or brand names does not imply any endorsement or recommendation on the part of the IAEA.

Authors are themselves responsible for obtaining the necessary permission to reproduce copyright material from other sources.

High-beta poloidal plasmas and current drive by ECRH on Tosca (IAEA-CN-41/I-5)	51
<i>M.W. Alcock, B. Lloyd, A.W. Morris, D.C. Robinson, D.F.H. Start</i>	
Discussion	60
Measurements of transport coefficients in the T-10 device (IAEA-CN-41/I-6)	63
<i>A.B. Berlizov, G.A. Bobrovskij, N.L. Vasin, A.N. Vertiporokh, N.D. Vinogradova, V.A. Vershkov, N.M. Gegechkori, E.P. Gorbunov, Yu. V. Esipchuk, S.L. Efremov, V.A. Zhuravlev, V.S. Zaveryaev, A. Ya. Kislov, S. Yu. Luk'yanov, Yu.S. Maksimov, G.E. Notkin, A.A. Medvedev, A.B. Pimenov, K.A. Razumova, V.A. Rantsev-Kartinov, M.M. Stepanenko, V.S. Strelkov, V.V. Timonin, V.M. Chicherov, D.A. Shcheglov, A.N. Fyakhretdinov</i>	
Discussion	77

PLASMA HEATING II (Session J)

Alfvén wave experiments in TCA (IAEA-CN-41/J-1-1)	81
<i>A. de Chambrier, A.D. Cheetham, A. Heym, F. Hofmann, B. Joye, R. Keller, A. Lietti, J.B. Lister, A. Pochelon, W. Simm, J.L. Toninato, A. Tuszel</i>	
Plasma heating and current drive by Alfvén waves (IAEA-CN-41/J-1-2)	91
<i>R.A. Demirkhanov, A.G. Kirov, G.I. Astapenko, S.E. Il'inskij, Eh.M. Lomakin, V.V. Onishchenko, L.F. Ruchko, A.V. Sukhachev, V.D. Medun, N.I. Malykh</i>	
Discussion on papers IAEA-CN-41/J-1-1 and J-1-2	101
Comprehensive analysis of antenna-plasma coupling in ICR heating of tokamaks and study of energy deposition (IAEA-CN-41/J-2)	103
<i>V.P. Bhatnagar, M.P. Evrard, D.W. Faulconer, P. Geilfus, R. Koch, M. Luwel, A.M. Messiaen, D.I.C. Pearson, P.E. Vandenplas, R.R. Weynants</i>	
ICRF heating experiment in JFT-2 (IAEA-CN-41/J-3)	113
<i>H. Kimura, H. Matsumoto, K. Odajima, S. Konoshima, T. Yamamoto, N. Suzuki, K. Hoshino, Y. Miura, T. Matsuda, H. Takeuchi, T. Sugie, S. Kasai, T. Yamauchi, H. Kawashima, T. Ogawa, T. Kawakami, T. Shoji, M. Mori, H. Ogawa, Y. Uesugi, K. Ohasa, S. Yamamoto, M. Maeno, S. Sengoku, H. Nakamura, H. Ohtsuka, T. Matoba, A. Funahashi, Y. Tanaka</i>	
Discussion	122

Investigation of electron cyclotron heating in the FT-1 tokamak over a wide range of plasma densities (IAEA-CN-41/J-4)	125
<i>Yu.F. Baranov, N.E. Bogdanova, D.G. Bulyginskij, V.K. Gusev, M.M. Larionov, L.S. Levin, G.T. Razdobarin, V.I. Fedorov</i>	
Discussion	133
Equilibrium, stability and heating of plasmas in linear and toroidal Extrap pinches (IAEA-CN-41/J-5)	135
<i>B. Bonnevier, H.E. Dalhed, J.R. Drake, T. Hellsten, P. Karlsson, R. Landberg, B. Lehnert, J. Scheffel, M. Tendler, E. Tennfors, B. Wilner</i>	
High-beta neoclassical current and stability experiments (IAEA-CN-41/J-6)	143
<i>J.D. Callen, R.N. Dexter, C.M. Fortgang, H.R. Garner, A.G. Kellman, D.W. Kerst, M.W. Phillips, S.C. Prager, J.C. Sprott, E.J. Strait, J.C. Twichell, M.C. Zarnstorff</i>	
Discussion	150

POST-DEADLINE PAPERS (Session K)

Lower-hybrid current-drive experiments in T-7 tokamak (IAEA-CN-41/K-1)	153
<i>V.V. Alikeev, V.L. Vdovin, D.P. Ivanov, N.V. Ivanov, V.I. Il'in, A.M. Kakurin, A. Ya. Kislov, P.E. Kovrov, V.A. Kochin, P.P. Khvostenko, I.N. Khromkov, V.V. Chistyakov, J. Ďatlov, F. Jaček, P. Klima, V. Kopecký, J. Preinhaelter, K. Jakubka</i>	
Discussion	161
Fusion reactor plasmas with polarized nuclei (IAEA-CN-41/K-2)	163
<i>R.M. Kulsrud, H.P. Furth, E.J. Valeo, R.V. Budny, D.L. Jassby, B.J. Micklich, D.E. Post, M. Goldhaber, W. Happer</i>	
Discussion	173
Curvature-driven trapped-particle modes in tandem mirrors (IAEA-CN-41/K-3)	175
<i>H.L. Berk, M.N. Rosenbluth, H.V. Wong, T.M. Antonsen, D.E. Baldwin, B. Lane</i>	

STELLARATORS, BUMPY TORI, MULTIPOLES I (Session L)

Plasma properties and ion heating in EBT-S and hot electron rings at TRW (IAEA-CN-41/L-1)	185
<i>F.W. Baity, L.A. Berry, L. Bighel, J.A. Cobble, R.J. Colchin, W.A. Davis, H.O. Eason, J.C. Glowienka, G.R. Haste, D.L. Hillis, S. Hiroe, R.K. Richards, T. Uckan, T.L. White, J.B. Wilgen, J.D. Barter, W.F. DiVergilio, L.L. Lao, N.H. Lazar, B.H. Quon, T.K. Samec, W. Wuerker, F.M. Bieniosek, J.H. Mullen, T.L. Owens, R.A. Dandl, G.E. Guest, G.A. Hallock, L. Solensten</i>	
Discussion	196
Experimental and numerical studies on plasma confinement in Nagoya Bumpy Torus (NBT) (IAEA-CN-41/L-2)	197
<i>M. Fujiwara, T. Kamimura, M. Hosokawa, T. Shoji, H. Iguchi, H. Sanuki, M. Tanaka, M. Aizawa, K. Takasugi, F. Tsuboi, H. Tsuchidate, K. Matsunaga, K. Kadota, A. Tsushima, K.W. Whang, H. Ikegami</i>	
Discussion	207
Heliotron studies (IAEA-CN-41/L-3)	209
<i>K. Uo, A. Iiyoshi, T. Obiki, O. Motojima, S. Morimoto, A. Sasaki, K. Kondo, M. Sato, T. Mutoh, H. Zushi, H. Kaneko, S. Besshou, F. Sano, T. Mizuuchi, S. Sudo, K. Hanatani, M. Nakasuga, I. Ohtake, M. Iima, Y. Nakashima, N. Nishino</i>	
Discussion	225
Plasma heating and confinement in the Khar'kov stellarators (IAEA-CN-41/L-4)	227
<i>A.V. Arsen'ev, V.E. Bykov, V.K. Bocharov, M.P. Vasil'ev, Ya.F. Volkov, A.V. Georgievskij, Yu.V. Gutarev, A.G. Dikij, V.G. Dyatlov, G.V. Zelenin, A.N. Letuchij, A.S. Loginov, S.S. Kalinichenko, V.G. Konovalov, V.D. Kotsubanov, P.G. Krishtal', A.E. Kulaga, A.I. Lysojvan, N.I. Mitina, N.I. Nazarov, O.A. Opalev, O.S. Pavlichenko, V.K. Pashnev, N.F. Perepelkin, D.P. Pogozhev, G.N. Polyakova, Yu.F. Sergeev, A.S. Slavnyj, K.N. Stepanov, V.A. Suprunenko, V.F. Tarasenko, F.A. Tkhoryak, V.T. Tolok, V.M. Tonkopryad, O.M. Shvets</i>	
Discussion	240

Neutral-injection heating in the Wendelstein VII-A Stellarator (IAEA-CN-41/L-5)	241
<i>G. Cattanei, D. Dorst, A. Elsner, G. Grieger, H. Hacker, J. Hartfuss, H. Jäckel, R. Jaenicke, J. Junker, M. Kick, H. Kroiss, C. Mahn, S. Marlier, G. Müller, W. Ohlendorf, F. Rau, H. Renner, H. Ringler, F. Sardei, M. Tutter, A. Weller, H. Wobig, E. Würsching, M. Zippe, K. Freudenberger, G.G. Lister, W. Ott, F.-P. Penningsfeld, E. Speth</i>	
Discussion	260

HIGH-BETA SYSTEMS II (Session M)

Experimental investigation of the spheromak configuration (IAEA-CN-41/M-1)	265
<i>M. Yamada, R. Ellis, Jr., H.P. Furth, R. Hulse, A. Janos, S.C. Jardin, D. McNeill, C. Munson, M. Okabayashi, S. Paul, D. Post, J. Sennis, C. Skinner, Y.C. Sun, F. Wysocki, C. Chin-Fatt, A.W. DeSilva, G.C. Goldenbaum, G.W. Hart, R. Hess, R.S. Shaw, C.W. Barnes, I. Hennins, H.W. Hoida, T.R. Jarboe, S.O. Knox, R.K. Linford, J. Lipson, J. Marshall, D.A. Platts, A.R. Sherwood, B.L. Wright</i>	
Discussion	280
Experimental studies of field-reversed configuration confinement in FRX-C (IAEA-CN-41/M-2-1)	283
<i>R.E. Siemon, W.T. Armstrong, R.R. Bartsch, R.E. Chrien, J.C. Cochran, R.W. Kewish, P.L. Klingner, R.K. Linford, J. Lipson, K.F. McKenna, D.J. Rej, E.G. Sherwood, M. Tuszewski</i>	
Compact toroidal plasmas: simulations and theory (IAEA-CN-41/M-2-2)	293
<i>D.S. Harned, D.W. Hewett, C.G. Lilliequist, R.W. Moses, D.D. Schnack, J.L. Schwarzmeier, A.G. Sgro, R.L. Spencer, D.V. Anderson, J. Killeen, A.A. Mirin, N.J. O'Neill, A.I. Shestakov, D.E. Shumaker, S.P. Auerbach, J.K. Boyd, T.A. Brengle, B.I. Cohen, J.H. Hammer, C.W. Hartman, W.C. Turner, A. Aydemir, D.C. Barnes, C. Bernhard, W.M. Tang, C. Seyler, J. Tataronis</i>	
Discussion on papers IAEA-CN-41/M-2-1 and M-2-2	301
Experimental studies on confinement of field-reversed-configuration plasma (IAEA-CN-41/M-3)	303
<i>T. Minato, M. Tanjyo, S. Okada, Y. Ito, M. Kako, S. Ohi, S. Goto, T. Ishimura, H. Ito, Y. Nogi, S. Shimamura, Y. Osanai, K. Saito, K. Yokoyama, S. Shiina, S. Hamada, H. Yoshimura, Y. Aso, C.H. Wu, S. Himeno, M. Okamoto, K. Hirano</i>	
Discussion	309

Merging experiment and simulation of compact toroids (IAEA-CN-41/M-4)	311
<i>K. Watanabe, K. Ikegami, M. Nagata, M. Nishikawa, A. Ozaki, N. Satomi, T. Uyama, T. Sato, S. Otsuka, T. Hayashi, K. Nishikawa</i>	
High-beta tokamak plasma physics studies (IAEA-CN-41/M-5-1)	321
<i>C.K. Chu, A.V. Deniz, D.J. Elkin, G. Erlebacher, R.A. Gross, R. Izzo, S. Johnston, C. Kostek, F. Levinton, M. Machida, T.C. Marshall, R.L. Merlino, G.A. Navratil, D. Oepts</i>	
Beta increase in a belt-pinch plasma by fast magnetosonic wave heating (IAEA-CN-41/M-5-2)	331
<i>V. Erckmann, A. Mayer, G. Müller, K. Schwörer, M. Thumm, R. Wilhelm</i>	
Discussion on papers IAEA-CN-41/M-5-1 and M-5-2	341
Suppression of losses in a compact torus with programmed shaping of the magnetic structure (IAEA-CN-41/M-6)	343
<i>V.V. Belikov, V.M. Goloviznin, V.K. Korshunov, A.P. Kreshchuk, R.Kh. Kurtmullaev, Ya.N. Laukhin, A.I. Malyutin, A.P. Proshletsov, O.L. Rostovtsev, V.N. Semenov, V.F. Strizhov</i>	
Discussion	349
 INERTIAL CONFINEMENT III (Session N)	
Inertial fusion research based on pulsed power (IAEA-CN-41/N-1)	353
<i>G. Yonas</i>	
Light-ion inertial confinement fusion research at Naval Research Laboratory (IAEA-CN-41/N-2)	361
<i>G. Cooperstein, R.J. Barker, D.G. Colombant, A. Drobot, Shyke A. Goldstein, R.A. Meger, D. Mosher, P.F. Ottinger, F.L. Sandel, S.J. Stephanakis, F.C. Young</i>	
Discussion	370
Research progress in intense ion beam production for inertial confinement fusion at Cornell University (IAEA-CN-41/N-3)	371
<i>H. Bluhm, J.B. Greenly, D.A. Hammer, B.R. Kusse, J. Maenchen, A. Mankofsky, J. Neri, R. Pal, T.J. Renk, G.D. Rondeau, R.N. Sudan</i>	
Discussion	381
Light ion beam fusion research in Japan (IAEA-CN-41/N-4)	383
<i>K. Imasaki, S. Miyamoto, S. Higaki, T. Ozaki, K. Nishihara, S. Ido, S. Nakai, C. Yamanaka, K. Yatsui, K. Masugata, M. Matsui</i>	
Discussion	392

Status of relativistic-electron-beam-generator-driven inertial- confinement fusion (IAEA-CN-41/N-5)	393
<i>L.E. Aranchuk, M.V. Babykin, K.A. Bajgarin, N.U. Barinov, A.V. Bartov, S.L. Bogolyubskij, V.V. Bulan, V.D. Vikharev, V.S. Volkov, Yu.M. Gorbunin, E.M. Gordeev, V.V. Gorev, E.V. Grabovskij, A.V. Gubarev, S.A. Dan'ko, S.K. Dolotov, V.I. Zajtsev, D.M. Zlotnikov, Yu.G. Kalinin, V.N. Kiselev, Yu.V. Koba, V.D. Korolev, P.V. Kuksov, V.I. Liksonov, V.I. Mizhiritskij, S.L. Nedoseev, G.M. Olejnik, L.I. Rudakov, V.A. Skoryupin, V.P. Smirnov, E.A. Smirnova, E.Z. Tarumov, M.V. Tulupov, S.D. Fanchenko, V.Ya. Tsarfin, A.S. Chernenko, R.V. Chikin, A.Yu. Shashkov, Yu.I. Shestakov, I.R. Yampol'skij, V.V. Yan'kov</i>	
Discussion	403
Investigation of the neutron production phases of a large plasma focus device (IAEA-CN-41/N-6-1)	405
<i>H. Herold, L. Bertalot, R. Deutsch, W. Grauf, U. Jäger, H.J. Kaeppler, F. Lepper, T. Oppenländer, H. Schmidt, R. Schmidt, J. Schwarz, K. Schwörer, M. Shakhatre, A. Hayd, M. Maurer, P. Meinke</i>	
Experimental progress in plasma dynamics and generation of energetic particles in dense plasma focus (IAEA-CN-41/N-6-2)	415
<i>M. Yokoyama, Y. Kitagawa, Y. Yamada, M. Okada, Y. Yamamoto, C. Yamanaka, K. Hirano, Y. Kondoh, K. Shimoda, T. Yamamoto, M. Hattori, M. Sato</i>	
Discussion on papers IAEA-CN-41/N-6-1 and N-6-2	423

TECHNOLOGY AND REACTOR CONCEPTS II (Session O)

TASKA – a tandem mirror fusion engineering test facility (IAEA-CN-41/O-1)	427
<i>TASKA Team (P. Komarek – Compiler)</i>	
KARIN-I: Conceptual design of a moving-ring reactor (IAEA-CN-41/O-2-1)	439
<i>KARIN-I Working Group</i>	
Conceptual design of a moving-ring reactor (IAEA-CN-41/O-2-2)	447
<i>A.C. Smith Jr., C.P. Ashworth, K.E. Abreu, G.A. Carlson, W.S. Neef Jr., H.H. Fleischmann, K.R. Schultz, C.P.C. Wong, D.K. Bhadra, R.L. Creedon, E.T. Cheng, G.R. Hopkins, W. Grossman Jr., D.M. Woodall, T. Kammash</i>	
Discussion on papers IAEA-CN-41/O-2-1 and O-2-2	459

Development of hydrogen pellet injectors and pellet fuelling experiments at Oak Ridge National Laboratory (IAEA-CN-41/O-3)	461	Theory and simulation of RF heating and current drive (IAEA-CN-41/V-9)	595
<i>S.L. Milora, S.K. Combs, C.A. Foster, W.A. Houlberg, J.T. Hogan, D.D. Schuresko, S.E. Attenberger, G.L. Schmidt, M.J. Greenwald, S. Wolfe, J. Parker</i>		<i>J.M. Dawson, B.D. Fried, G.J. Morales, A.T. Lin, V.K. Decyk, M. Caplan</i>	
Blanket and shield experiments in Fusion Neutronics Source (FNS) (IAEA-CN-41/O-4)	471	Stellarator, hybrid stellarator, torsatron and low-shear stellarator studies (IAEA-CN-41/V-10)	603
<i>T. Nakamura, H. Maekawa</i>		<i>G. Anania, R.C. Grimm, D. Ho, J.L. Johnson, R.M. Kulsrud, J. Manickam, K.E. Weimer, G. Berge, W.H. Choe, J.P. Freidberg, J.M. Noterdaeme, Y.P. Pao, P.A. Politzer, P. Rosenau, D. Sherwell, O. Betancourt, M. Mond, H. Weitzner</i>	
Discussion	484	Theory of transport and heating in EBT (IAEA-CN-41/V-11)	613
Feedback control of thermal instability by compression and decompression (IAEA-CN-41/O-5)	485	<i>C.L. Hedrick, D.B. Batchelor, G.L. Chen, L.E. Deleanu, R.C. Goldfinger, D.E. Hastings, E.F. Jaeger, D.K. Lee, C.W. Nester, L.W. Owen, D.A. Spong, J.S. Tolliver, N.A. Uckan, N.T. Gladd, S. Hamasaki, N.A. Krall, J.L. Sperling, H. Weitzner, R.J. Kashuba, M.R. Gordinier, T.L. Owens, D.G. Swanson, S. Tamor</i>	
<i>M. Okamoto, M. Ohnishi, K. Hirano, T. Amano</i>			
POSTER SESSION (Session V)		Chairmen of Sessions	623
Low-m magnetic-mode activity, disruptions in tokamak discharges and their control (IAEA-CN-41/V-1)	495	Secretariat of the Conference	624
<i>M. Cotsaftis</i>			
RF current drive in tokamaks and compact tori (IAEA-CN-41/V-2)	507		
<i>E. Canobbio, R. Croci</i>			
Resistive ballooning modes in three-dimensional configurations (IAEA-CN-41/V-3)	519		
<i>D. Correa-Restrepo</i>			
Filamentary structures in tokamaks and their importance to anomalous electron energy loss (IAEA-CN-41/V-4)	531		
<i>M.G. Haines, F. Marsh</i>			
Computation of plasma equilibrium and stability in stellarators on the basis of a generalized two-dimensional equilibrium equation (IAEA-CN-41/V-5)	541		
<i>V.D. Pustovitov, V.D. Shafranov, L.E. Zakharov, L.M. Degtyarev, V.V. Drozdov, S.Yu. Medvedev, Yu.Yu. Poshekhonov, M.I. Mikhailov</i>			
Current generation by interaction of alpha particles with ICRF waves (IAEA-CN-41/V-6)	557		
<i>K. Okano, N. Inoue, T. Uchida, R. Sugihara, Y. Ogawa</i>			
Ballooning MHD modes in toroidal systems with complicated magnetic-field geometry (IAEA-CN-41/V-7)	567		
<i>A.B. Mikhailovskij, V.V. Demchenko, A.Ya. Omel'chenko</i>			
Plasma heating by anomalous absorption of large-amplitude Alfvén (ion cyclotron) waves (IAEA-CN-41/V-8)	581		
<i>A.G. Dikij, S.S. Kalinichenko, A.I. Lysojvan, V.S. Mikhailenko, N.I. Nazarov, A.I. Pyatak, V.L. Sizonenko, A.S. Slavnyj, K.N. Stepanov, V.F. Tarasenko, O.M. Shvets</i>			