

- ARTICLES  
MICROSCOPY AND IMAGING
- 3091 **Low-temperature field emission system for development of ultracoherent electron beams**  
B. Cho, T. Ogawa, T. Ichimura, T. Ichinokawa, T. Amakusa, and C. Oshima
- ARTICLES  
CONDENSED MATTER; MATERIALS
- 3097 **Fast and adjustable-resolution grazing-incidence x-ray liquid surface diffraction**  
Philippe Fontaine, Michel Goldmann, Michel Bordessoule, and Alain Jucha
- ARTICLES  
CHEMISTRY
- 3107 **Measurements of picosecond lifetimes by time correlated single photon counting method: The effect of the refraction index of the solvent on the instrument response function**  
Teresa Wróźowa, Barbara Ciesielska, Dariusz Komar, Jerzy Karolczak, Andrzej Maciejewski, and Jacek Kubicki
- ARTICLES  
CONDENSED MATTER; MATERIALS
- 3122 **A system of Kerr effect spectroscopy for light absorbing liquids**  
Kazuyoshi Horii and Keiji Sakai
- ARTICLES  
CONDENSED MATTER; MATERIALS
- 3127 **A new experimental design for noncontact giant magnetoresistance measurements using the magnetorefractive effect**  
M. Vopsaroiu, J. A. D. Matthew, and S. M. Thompson
- ARTICLES  
OPTICS; ATOMS AND MOLECULES; SPECTROSCOPY; PHOTON DETECTORS
- 3131 **Characterization of CsI photocathodes at grazing incidence for use in a unit quantum efficiency x-ray streak camera**  
D. P. Lowney, P. A. Heimann, H. A. Padmore, E. M. Gullikson, A. G. MacPhee, and R. W. Falcone
- ARTICLES  
PARTICLE SOURCES, OPTICS AND ACCELERATION; PARTICLE DETECTORS
- 3138 **A new plasma potential measurement instrument for plasma ion sources**  
O. Tarvainen, P. Suominen, and H. Koivisto
- ARTICLES  
MICROSCOPY AND IMAGING
- 3146 **Contrast and resolution in direct Fresnel diffraction phase-contrast imaging with partially coherent x-ray source**  
Shensheng Han, Hong Yu, Jing Cheng, Chen Gao, and Zhenlin Luo
- ARTICLES  
CHEMISTRY
- 3152 **High-pressure nuclear magnetic resonance probe designed for a narrow bore magnet system**  
Achim Zahl, Peter Igel, Manfred Weller, and Rudi van Eldik

- ARTICLES  
CONDENSED MATTER; MATERIALS
- 3158 **Instrumentation for cryogenic microwave cavity resonance measurements**  
C. C. Tsai, J. R. Feller, Bimal K. Sarma, and J. B. Ketterson
- ARTICLES  
GENERAL INSTRUMENTS
- 3164 **Industrial application of ultrasound based in-line rheometry: From stationary to pulsating pipe flow of chocolate suspension in precrystallization process**  
Boris Ouriev, Erich Windhab, Peter Braun, and Beat Birkhofer
- ARTICLES  
ELECTRONICS; ELECTROMAGNETIC TECHNOLOGY; MICROWAVES
- 3169 **Cryogenic amplifier for ~1 MHz with a high input impedance using a commercial pseudomorphic high electron mobility transistor**  
A. M. Robinson and V. I. Talyanskii
- ARTICLES  
NUCLEAR PHYSICS, FUSION AND PLASMAS
- 3177 **Comparison of different methods of electron cyclotron emission-correlation radiometry for the measurement of temperature fluctuations in the plasma core**  
Christopher Watts, H. J. Hartfuss, and M. Häse
- ARTICLES  
GENERAL INSTRUMENTS
- 3185 **Development of thrust stand for low impulse measurement from microthrusters**  
H. Koizumi, K. Komurasaki, and Y. Arakawa
- ARTICLES  
MICROSCOPY AND IMAGING
- 3191 **Microtomography and improved resolution in cathodoluminescence microscopy using confocal mirror optics**  
D. S. H. Chan, Y. Y. Liu, J. C. H. Phang, E. Rau, R. Sennov, and A. V. Gostev
- ARTICLES  
CHEMISTRY
- 3200 **A visual acoustic high-pressure cell for the study of critical behavior of nonsimple mixtures**  
A. Aguiar-Ricardo, M. Temtem, T. Casimiro, and N. Ribeiro
- ARTICLES  
THERMOMETRY; THERMAL DIFFUSIVITY; ACOUSTIC; PHOTOTHERMAL AND PHOTOACOUSTIC
- 3203 **Application of the acousto-optic effect to pressure measurements in ultrasound fields in water using a laser vibrometer**  
J. M. Buick, J. A. Cosgrove, P.-A. Douissard, C. A. Greated, and B. Gilabert
- ARTICLES  
OPTICS; ATOMS AND MOLECULES; SPECTROSCOPY; PHOTON DETECTORS
- 3208 **Applications of a single-longitudinal-mode alexandrite laser for diagnostics of parameters of combustion interest**  
Z. S. Li, M. Afzelius, J. Zetterberg, and M. Aldén
- ARTICLES  
OPTICS; ATOMS AND MOLECULES; SPECTROSCOPY; PHOTON DETECTORS
- 3216 **Versatile fiber-coupled system for simultaneous photon correlation spectroscopy and Fabry–Perot interferometry**  
R. B. Bogoslovov, D. P. Shelton, J. C. Selser, G. Piet, and S. Peng
- ARTICLES  
PARTICLE SOURCES, OPTICS AND ACCELERATION; PARTICLE DETECTORS
- 3224 **An atom trap system for practical  $^{81}\text{Kr}$  dating**  
X. Du, K. Bailey, Z.-T. Lu, P. Mueller, T. P. O'Connor, and L. Young

*(Continued)*

## ARTICLES

## CONDENSED MATTER; MATERIALS

- 3233 **Large-aperture variable-volume view cell for the determination of phase-equilibria in high pressure systems and supercritical fluids**

Peter Licence, Martin P. Dellar, Richard G. M. Wilson, Peter A. Fields, David Litchfield, Helen M. Woods, Martyn Poliakoff, and Steven M. Howdle

## ARTICLES

## CHEMISTRY

- 3237 **Optical fiber gas sensor based on thermal lens spectroscopy**

Atsushi Yurai and Takuji Nakanishi

## ARTICLES

## CHEMISTRY

- 3242 **An *in situ* cell for characterization of solids by soft x-ray absorption**

Ian J. Drake, Teris C. N. Liu, Mary Gilles, Tolek Tyliczszak, A. L. David Kilcoyne, David K. Shuh, Richard A. Mathies, and Alexis T. Bell

## ARTICLES

## MICROSCOPY AND IMAGING

- 3248 **Fabrication of super-sharp nanowire atomic force microscope probes using a field emission induced growth technique**

A. B. H. Tay and J. T. L. Thong

## ARTICLES

## CONDENSED MATTER; MATERIALS

- 3256 **Polarized neutron reflectometry of a patterned magnetic film with a  $^3\text{He}$  analyzer and a position-sensitive detector**

W. C. Chen, T. R. Gentile, K. V. O'Donovan, J. A. Borchers, and C. F. Majkrzak

## ARTICLES

## BIOLOGY AND MEDICINE

- 3264 **Dynamic radiography using a carbon-nanotube-based field-emission x-ray source**

Y. Cheng, J. Zhang, Y. Z. Lee, B. Gao, S. Dike, W. Lin, J. P. Lu, and O. Zhou

## ARTICLES

## NUCLEAR PHYSICS, FUSION AND PLASMAS

- 3268 **Design of a high-efficiency extreme ultraviolet overview spectrometer system for plasma impurity studies on the stellarator experiment Wendelstein 7-X**

W. Biel, G. Bertschinger, R. Burhenn, R. König, and E. Jourdain

## ARTICLES

## BIOLOGY AND MEDICINE

- 3276 **Design of a portable near infrared system for topographic imaging of the brain in babies**

Tharshan Vaithianathan, Iain D. C. Tullis, Nicholas Everdell, Terence Leung, Adam Gibson, Judith Meek, and David T. Delpy

## ARTICLES

## MICROSCOPY AND IMAGING

- 3284 **Submicron resolution infrared microscopy by use of a near-field scanning optical microscope with an apertured cantilever**

Tatsuhiro Masaki, Yasushi Inouye, and Satoshi Kawata

## ARTICLES

## NUCLEAR PHYSICS, FUSION AND PLASMAS

- 3288 **Characterization of gas targets for laser produced extreme ultraviolet plasmas with a Hartmann-Shack sensor**

Christian Peth, Sebastian Kranzusch, Klaus Mann, and Wolfgang Viöl

- ARTICLES  
NUCLEAR PHYSICS, FUSION AND PLASMAS
- 3294 **Compact microwave imaging system to measure spatial distribution of plasma density**  
H. Ito, R. Oba, N. Yugami, and Y. Nishida
- ARTICLES  
OPTICS; ATOMS AND MOLECULES; SPECTROSCOPY; PHOTON DETECTORS
- 3298 **System for evaluation of laser-induced damage performance of optical materials for large aperture lasers**  
P. DeMange, C. W. Carr, H. B. Radousky, and S. G. Demos
- ARTICLES  
CONDENSED MATTER; MATERIALS
- 3302 ***In situ* high pressure-temperature Raman spectroscopy technique with laser-heated diamond anvil cells**  
Jung-Fu Lin, Mario Santoro, Viktor V. Struzhkin, Ho-kwang Mao, and Russell J. Hemley
- ARTICLES  
ELECTRONICS; ELECTROMAGNETIC TECHNOLOGY; MICROWAVES
- 3307 **Quasi-spherical cavity resonators for metrology based on the relative dielectric permittivity of gases**  
Eric F. May, Laurent Pitre, James B. Mehl, Michael R. Moldover, and James W. Schmidt
- ARTICLES  
OPTICS; ATOMS AND MOLECULES; SPECTROSCOPY; PHOTON DETECTORS
- 3318 **Broadband precision wavelength meter based on a stepping Fabry-Pérot interferometer**  
T. J. Scholl, S. J. Rehse, R. A. Holt, and S. D. Rosner
- ARTICLES  
CHEMISTRY
- 3327 **Instrumented sphere method for measuring thermal pressure in fluids and isotropic stresses and reaction kinetics in thermosetting resins**  
Mikhail Merzlyakov, Yan Meng, Sindee L. Simon, and Gregory B. McKenna
- ARTICLES  
MICROSCOPY AND IMAGING
- 3335 **In-plane measurements of microelectromechanical systems vibrations with nanometer resolution using the correlation of synchronous images**  
B. Serio, J. J. Hunsinger, and B. Cretin
- ARTICLES  
GENERAL INSTRUMENTS
- 3342 **Automatic VIS- near IR laser refractometer**  
Y. Sarov, S. Sainov, I. Kostic, V. Sarova, and S. Mitkov
- ARTICLES  
CONDENSED MATTER; MATERIALS
- 3345 **Microsystem with integrated capillary leak to mass spectrometer for high sensitivity temperature programmed desorption**  
Ulrich J. Quaade, Søren Jensen, and Ole Hansen
- NOTES
- 3348 **Improved phase modulation for an *en-face* scanning three-dimensional optical coherence microscope**  
Barbara M. Hoeling, Mary E. Peter, Daniel C. Petersen, and Richard C. Haskell

(Continued)

NOTES

- 3351 **Device for rapid sample insertion and extraction in thermal chemical vapor deposition tube furnace**

William S. McBride and Rodney S. Ruoff

NOTES

- 3354 **A versatile computer-controlled valve**

Sara Stiltner, Andrea Zytovicz, and R. J. Rollefson

NOTES

- 3356 **A new simplified high radio frequency power amplifier**

Y. Ogawa, H. Okutsu, N. Kobayashi, and A. Hayakawa

NOTES

- 3360 **Microlensed red and violet diode lasers in an extended cavity geometry**

A. E. Carruthers, T. K. Lake, A. Shah, J. W. Allen, W. Sibbett, and K. Dholakia

NOTES

- 3363 **Simple, compact, flow-through, high temperature high pressure cell for UV-Vis spectrophotometry**

O. M. Suleimenov

NOTES

- 3365 **Low cost multitarget holder for pulsed laser deposition system**

Xu Wang, Arthur F. Pun, Yan Xin, and Jim P. Zheng

NEW PRODUCTS

- 3368 **NEW PRODUCTS**

- 3372 **CUMULATIVE AUTHOR INDEX**

- PREFACE
- 3381 **Preface: Proceedings of the 15th Topical Conference on High-Temperature Plasma Diagnostics, San Diego, CA, 2004**  
Réjean L. Boivin
- PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE PLASMA DIAGNOSTICS  
INTERFEROMETRY, POLARIMETRY, AND ACTIVE SPECTROSCOPY
- 3382 **Phase measurement using x rays (invited)**  
A. G. Peele and K. A. Nugent
- 3387 **Laser Faraday rotation measurement of current density fluctuations and electromagnetic torque (invited)**  
W. X. Ding, D. L. Brower, B. H. Deng, D. Craig, S. C. Prager, and V. Svidzinski
- 3393 **Active beam spectroscopy diagnostics for ITER: Present status (invited)**  
A. Malaquias, M. von Hellermann, S. Tugarinov, P. Lotte, N. Hawkes, M. Kuldkepp, E. Rachlew, A. Gorshkov, C. Walker, A. Costley, and G. Vayakis
- 3399 **Fizeau interferometer for measurement of plasma electron current**  
D. L. Brower, W. X. Ding, B. H. Deng, M. A. Mahdavi, V. Mirnov, and S. C. Prager
- 3402 **Design of a far-infrared interferometer/polarimeter system for Korea Superconducting Tokamak Advanced Research**  
M. S. Cheon, Y. U. Nam, J. H. Ha, and Y. S. Hwang
- 3405 **Spurious oscillations affecting FIR polarimetry measurements**  
D. Elbéze, C. Gil, R. Giannella, L. De Pasqual, and JET-EFDA Contributors
- 3408 **An improved Abel inversion method modified for tangential interferometry in tokamak**  
J. H. Ha, Y. U. Nam, M. S. Cheon, and Y. S. Hwang
- 3411 **Application of the singular value decomposition method for inversion of interferometer measurements in fusion plasmas**  
C. S. Carey, I. Furno, H. Weisen, R. Behn, E. Fable, and C. Angioni
- 3414 **High resolution CO<sub>2</sub> interferometry on the TJ-II stellarator by using an ADC-based phase meter**  
M. Sánchez, J. Sánchez, T. Estrada, E. Sánchez, P. Acedo, and H. Lamela
- 3417 **Improved common-path fast-scanning heterodyne interferometer system as potential dense-plasma diagnostics**  
Y. U. Nam, M. S. Cheon, J. H. Ha, and Y. S. Hwang
- 3420 **Toroidal interferometer/polarimeter density measurement system on ITER**  
T. Kondoh, A. E. Costley, T. Sugie, Y. Kawano, A. Malaquias, and C. I. Walker
- 3423 **Phase error correction method for a vibration compensated interferometer**  
M. A. Van Zeeland and T. N. Carlstrom
- 3426 **A Martin–Puplett cartridge FIR interferometer**  
Roger J. Smith, Edwin E. Penniman, and Thomas R. Jarboe

- 3429 **Precise density profile measurements by using a two color YAG/CO<sub>2</sub> laser imaging Interferometer on LHD**  
K. Tanaka, A. L. Sanin, L. N. Vyacheslavov, T. Akiyama, K. Kawahata, T. Tokuzawa, Y. Ito, and S. Okajima
- 3433 **Edge density fluctuation characterization in *H*-mode and polarimetry measurement via the FIRETIP system on NSTX**  
K. C. Lee, C. W. Domier, M. Johnson, N. C. Luhmann, Jr., and H. Park
- 3436 **Hypervelocity dust beam injection for national spherical torus experiment**  
Zhehui Wang and G. A. Wurden
- 3439 **Two-dimensional phase contrast interferometer for fluctuations study on LHD**  
A. L. Sanin, K. Tanaka, L. N. Vyacheslavov, K. Kawahata, and T. Akiyama
- 3442 **Laser wavefront analyzer for imploding plasma density and current profile measurements**  
N. Qi, R. R. Prasad, K. Campbell, P. Coleman, M. Krishnan, B. V. Weber, S. J. Stephanakis, and D. Mosher
- 3446 **First mirror contamination studies for polarimetry motional Stark effect measurements for ITER**  
M. Kuldkepp, E. Rachlew, N. C. Hawkes, and B. Schunke
- 3449 **A high throughput spectrometer system for helium ash detection on JET**  
D. L. Hillis, D. T. Fehling, R. E. Bell, D. W. Johnson, K.-D. Zastrow, A. Meigs, C. Negus, C. Giroud, M. Stamp, and JET-EFDA Contributors
- 3452 **Calibration of the charge exchange recombination spectroscopy diagnostic for core poloidal rotation velocity measurements on JET**  
K. Crombé, Y. Andrew, C. Giroud, N. C. Hawkes, A. Murari, M. Valisa, G. Van Oost, K.-D. Zastrow, and JET-EFDA Contributors
- 3455 **Improved charge-coupled device detectors for high-speed, charge exchange spectroscopy studies on the DIII-D tokamak**  
K. H. Burrell, P. Gohil, R. J. Groebner, D. H. Kaplan, J. I. Robinson, and W. M. Solomon
- 3458 **Pilot experiments for the International Thermonuclear Experimental Reactor active beam spectroscopy diagnostic**  
M. von Hellermann, M. de Bock, R. Jaspers, K. Jakubowska, R. Barnsley, C. Giroud, N. C. Hawkes, K. D. Zastrow, P. Lotte, R. Giannella, A. Malaquias, E. Rachlew, S. Tugarinov, A. Krasilnikov, A. Litnovsky, V. Philipps, P. Wienhold, P. Oelhafen, G. De Temmerman, and L. Shmaenok
- 3462 **Development of the motional Stark effect with laser-induced fluorescence diagnostic**  
E. L. Foley and F. M. Levinton
- 3465 **Feasibility of a motional Stark effect system on the TCV tokamak**  
M. R. Siegrist, N. Hawkes, and H. Weisen
- 3468 **Design of a D-alpha beam-ion profile diagnostic**  
Y. Luo, W. W. Heidbrink, and K. H. Burrell
- 3471 **Fast neutral lithium beam probing of the edge region of the spherical tokamak ETE**  
R. M. Oliveira, M. Ueda, L. A. Berni, and H. Iguchi
- 3475 **Motional Stark effect diagnostic on TEXTOR**  
K. Jakubowska, M. De Bock, R. Jaspers, M. von Hellermann, and L. Shmaenok
- 3478 **Multipulse supersonic helium beam diagnostic in the TJ-II stellarator**  
A. Hidalgo, D. Tafalla, B. Brañas, and F. L. Tabarés

*(Continued)*

- 3481 **Extraction of poloidal velocity from charge exchange recombination spectroscopy measurements**  
W. M. Solomon, K. H. Burrell, P. Gohil, R. J. Groebner, and L. R. Baylor
- 3487 **Interpretation of neutral beam emission spectra as the beam-component density distribution**  
William L. Rowan, M. B. Sampsel, and R. S. Granetz
- 3490 **Turbulence velocimetry of density fluctuation imaging data**  
G. R. McKee, R. J. Fonck, D. K. Gupta, D. J. Schlossberg, M. W. Shafer, C. Holland, and G. Tynan
- 3493 **Enhanced sensitivity beam emission spectroscopy system for nonlinear turbulence measurements**  
Deepak K. Gupta, Raymond J. Fonck, George R. McKee, David J. Schlossberg, and Morgan W. Shafer
- 3496 **Neutral beam diagnostics for the HT-7 tokamak**  
L. Q. Hu, B. N. Wan, C. D. Hu, B. H. Liu, Z. W. Wu, J. Huang, (HT-7 DNB Team), William L. Rowan, H. Huang, and K. Gentle
- 3499 **Diagnostic neutral beam injector and associated diagnostic systems for the TJ-II stellarator device**  
K. J. McCarthy, R. Balbín, A. López-Fraguas, A. García, J. M. Carmona, J. Sánchez, and A. A. Ivanov
- 3502 **Analysis of heavy ion beam probe potential measurement errors in the Madison Symmetric Torus**  
X. Zhang, J. Lei, K. A. Connor, D. R. Demers, P. M. Schoch, and U. Shah
- 3505 **Simultaneous measurements of density and potential fluctuation with heavy ion beam probe in the Compact Helical System**  
H. Nakano, A. Fujisawa, A. Shimizu, T. Minami, Y. Yoshimura, S. Okamura, K. Matsuoka, and S. Ohshima
- 3508 **Development of a new two color far infrared laser interferometer for future fusion devices**  
K. Kawahata, K. Tanaka, T. Tokuzawa, T. Akiyama, Y. Ito, S. Okajima, K. Nakayama, and R. J. Wylde
- 3511 **Operation of a multiple cell array detector in plasma experiments with a heavy ion beam diagnostic**  
B. Gonçalves, A. Malaquias, I. S. Nedzelskiy, L. Pereira, C. Silva, C. A. F. Varandas, J. A. C. Cabral, S. M. Khrebtov, N. B. Dreval, L. I. Krupnik, C. Hidalgo, and J. Depablos
- 3514 **Time-of-flight energy analyzer for the plasma potential measurements by a heavy ion beam diagnostic**  
I. S. Nedzelskiy, A. Malaquias, B. Gonçalves, C. Silva, C. A. F. Varandas, and J. A. C. Cabral
- 3517 **Heavy ion beam probe development for the plasma potential measurement on the TUMAN-3M tokamak**  
L. G. Askinazi, V. A. Kornev, S. V. Lebedev, A. S. Tukachinsky, N. A. Zhubr, N. B. Dreval, and L. I. Krupnik

PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE  
PLASMA DIAGNOSTICS  
FUSION PRODUCTS, BEAMS, FAST PARTICLES

- 3520 **D<sup>3</sup>He-proton emission imaging for inertial-confinement-fusion experiments (invited)**  
F. H. Séguin, J. L. DeCiantis, J. A. Frenje, S. Kurebayashi, C. K. Li, J. R. Rygg, C. Chen, V. Berube, B. E. Schwartz, R. D. Petrasso, V. A. Smalyuk, F. J. Marshall, J. P. Knauer, J. A. Delettrez, P. W. McKenty, D. D. Meyerhofer, S. Roberts, T. C. Sangster, K. Mikaelian, and H. S. Park
- 3526 **Charge exchange imaging of space plasmas (invited)**  
Earl Scime and Anna Zaniewski
- 3531 **Proton radiography as an electromagnetic field and density perturbation diagnostic (invited)**  
A. J. Mackinnon, P. K. Patel, R. P. Town, M. J. Edwards, T. Phillips, S. C. Lerner, D. W. Price, D. Hicks, M. H. Key, S. Hatchett, S. C. Wilks, M. Borghesi, L. Romagnani, S. Kar, T. Toncian, G. Pretzler, O. Willi, M. Koenig, E. Martinolli, S. Lepape, A. Benuzzi-Mounaix, P. Audebert, J. C. Gauthier, J. King, R. Snavely, R. R. Freeman, and T. Boehlly
- 3537 **Detailed design of ex-vessel neutron yield monitor for ITER**  
K. Asai, T. Iguchi, K. Watanabe, J. Kawarabayashi, T. Nishitani, and C. I. Walker
- 3540 **First MeV ion loss measurements using activation technique in reversed B experiments at JET**  
G. Bonheure, S. Popovichev, L. Bertalot, A. Murari, S. Conroy, and JET-EFDA Contributors
- 3543 **Control and monitoring system for fusion neutron spectroscopy on the Joint European Torus**  
M. Tardocchi, G. Gorini, D. Palma, C. Sozzi, J. Källne, S. Conroy, G. Ericsson, L. Giacomelli, W. Glasser, H. Henriksson, A. Hjalmarsson, E. Ronchi, H. Sjöstrand, M. Weiszflog, S. Popovichev and JET-EFDA Contributors
- 3547 **Error estimation and parameter dependence of the calculation of the fast ion distribution function, temperature, and density using data from the KF1 high energy neutral particle analyzer on Joint European Torus**  
Christian Schlatter, Duccio Testa, Marco Ceconello, Andrea Murari, Marko Santala, and JET-EFDA Contributors
- 3550 **Neutron measurements on Joint European Torus using an NE213 scintillator with digital pulse shape discrimination**  
B. Esposito, L. Bertalot, D. Marocco, M. Riva, Y. Kaschuck, S. Skopintsev, A. Zimbal, M. Reginatto, H. Schuhmacher, J. M. Adams, A. Murari, and Contributors to the EFDA-JET workprogram
- 3553 **Compact NE213 neutron spectrometer with high energy resolution for fusion applications**  
A. Zimbal, M. Reginatto, H. Schuhmacher, L. Bertalot, B. Esposito, F. Poli, J. M. Adams, S. Popovichev, V. Kiptily, A. Murari, and Contributors to the EFDA-JET work program
- 3556 **Approaches to confined alpha diagnostics on ITER**  
R. K. Fisher
- 3559 **Prototypes of National Ignition Facility neutron time-of-flight detectors tested on OMEGA**  
V. Yu. Glebov, C. Stoeckl, T. C. Sangster, S. Roberts, G. J. Schmid, R. A. Lerche, and M. J. Moran

(Continued)

- 3563 **Scintillator probe for lost alpha measurements in JET**  
S. Baeumel, A. Werner, R. Semler, S. Mukherjee, D. S. Darrow, R. Ellis, F. E. Cecil, L. Pedrick, H. Altmann, V. Kiptily, J. Gafert, and JET-EFDA Contributors
- 3566 **Design and construction of a fast ion loss Faraday cup array diagnostic for Joint European Torus**  
D. S. Darrow, S. Bäumel, F. E. Cecil, V. Kiptily, R. Ellis, L. Pedrick, and A. Werner
- 3569 **Preliminary calculations of expected signal levels of a thin Faraday foil lost alpha particle diagnostic for International Thermonuclear Experimental Reactor**  
F. E. Cecil, D. S. Darrow, and R. V. Budny
- 3572 **Progress on neutron pinhole imaging for inertial confinement fusion experiments**  
G. P. Grim, G. L. Morgan, M. D. Wilke, P. L. Gobby, C. R. Christensen, and D. C. Wilson
- 3575 **First measurement of time-resolved neutron yield on JT-60U using a microfission chamber**  
T. Hayashi, T. Nishitani, and M. Ishikawa
- 3578 **Development of fusion neutron camera using organic liquid scintillator and wavelength shifting fiber**  
D. Inui, T. Iguchi, K. Watanabe, J. Kawarabayashi, and T. Nishitani
- 3581 **Response function measurement of layered type CVD single crystal diamond radiation detectors for 14 MeV neutrons**  
J. H. Kaneko, T. Teraji, Y. Hirai, M. Shiraishi, S. Kawamura, S. Yoshizaki, T. Ito, K. Ochiai, T. Nishitani, and T. Sawamura
- 3585 **Design of the collective Thomson scattering diagnostic for International Thermonuclear Experimental Reactor at the 60 GHz frequency range**  
F. Meo, H. Bindslev, S. B. Korsholm, E. L. Tsakadze, C. I. Walker, P. Woskov, and G. Vayakis
- 3589 **Calibration of National Ignition Facility neutron detectors in the energy range  $E < 14$  MeV**  
G. J. Schmid, J. A. Koch, M. J. Moran, T. W. Phillips, V. Yu. Glebov, T. C. Sangster, C. Stoeckl, S. A. Wender, and E. C. Morse
- 3592 **Downscattered neutron imaging**  
Michael Moran, Steven Haan, Stephen Hatchett, Jeffrey Koch, Carlos Barrera, and Edward Morse
- 3595 **High sensitivity neutron detector for Z**  
L. E. Ruggles, J. L. Porter, Jr., W. W. Simpson, M. F. Vargas, D. M. Zagar, R. Hartke, F. Buersgens, D. R. Symes, and T. Ditmire
- 3598 **Feasibility study of fast ion diagnosis in ITER by collective Thomson scattering, millimeter waves to CO<sub>2</sub> laser**  
H. Bindslev, F. Meo, E. L. Tsakadze, S. B. Korsholm, and P. Woskov
- 3601 **Evaluation of energetic particle confinement using CXNPA with NB-blip experiments on Large Helical Device**  
M. Osakabe, T. Seki, Y. Takeiri, K. Tanaka, K. Narihara, LHD Experimental Group S. Murakami, and M. Sasao
- 3604 **Two-dimensional scanning high-energy particle diagnostic system in Large Helical Device**  
T. Ozaki, P. Goncharov, S. Sudo, M. Shoji, K. Kawahata, O. Kaneko, and the LHD Experimental Group S. Murakami
- 3607 **Loss cone boundary measurement using diagnostic neutral beam and neutral particle analyzer in a compact helical system**  
H. Matsushita, K. Ida, S. Okamura, M. Isobe, R. Akiyama, Y. Yoshimura, and the CHS Group

(Continued)

- 3610 **Measurement of the internal magnetic field of plasmas using an alpha particle source**  
S. J. Zweben, D. S. Darrow, P. W. Ross, J. L. Lowrance, and G. Renda
- 3613 **Digital processing of solid state detector signals in pellet charge exchange measurements on LHD**  
P. R. Goncharov, T. Ozaki, S. Sudo, N. Tamura, M. Isobe, TESPEL Group, LHD Experimental Group, M. Sasao, T. Saida, A. V. Krasilnikov, and V. Yu. Sergeev
- 3616 **Measurements of the relaxation of ion anisotropic distribution functions in tandem-mirror plasmas**  
T. Numakura, T. Cho, J. Kohagura, M. Hirata, T. Fukai, N. Yokoyama, Y. Tomii, R. Minami, K. Sakamoto, T. Imai, and S. Miyoshi
- 3619 **Direct measurements of the electrostatically and magnetically bounced ions in the tandem mirror**  
K. Ishii, K. Hagiwara, Y. Takemura, A. Kojima, Y. Miyata, M. Yoshikawa, T. Saito, I. Katanuma, and T. Cho
- 3622 **Utility of a baffled Langmuir probe for applications to edge plasma and turbulence characterization in stellarator plasma**  
W. Guttenfelder, C. Lechte, M. E. Koepke, and V. I. Demidov
- 3625 **Neutral particle analyzer diagnostic on the National Spherical Torus Experiment**  
S. S. Medley and A. L. Roquemore
- 3628 **Fast measurement of picoamp plasma flows using trapped electron clouds**  
A. A. Kabantsev and C. F. Driscoll
- 3631 **Novel compact electrostatic ion-current detector using a self-collection method for secondary-electron suppression**  
M. Hirata, S. Tokioka, T. Cho, J. Kohagura, M. Yoshida, Y. Miyake, T. Numakura, N. Yokoyama, T. Fukai, Y. Tomii, Y. Nakashima, S. Miyoshi, and T. Kondoh
- 3634 **Fast ion millimeter wave collective Thomson scattering diagnostics on TEXTOR and ASDEX upgrades**  
S. Michelsen, S. B. Korsholm, H. Bindslev, F. Meo, P. K. Michelsen, E. L. Tsakadze, J. Egedal, P. Woskov, J. A. Hoekzema, F. Leuterer, and E. Westerhof
- 3637 **Measurement of ion temperature and density profiles with a time-of-flight type neutral-particle analyzer**  
M. Ichimura, H. Higaki, T. Kawabata, D. Inoue, H. Nagai, S. Kakimoto, Y. Yamaguchi, K. Horinouchi, K. Ide, K. Nakagome, and T. Cho
- 3640 **Solid state neutral particle analyzer array on National Spherical Torus Experiment**  
K. Shinohara, D. S. Darrow, A. L. Roquemore, S. S. Medley, and F. E. Cecil
- 3643 **Charge exchange neutral particle measurements with natural diamond detector under the deuterium–deuterium neutron field on JT-60U tokamak**  
M. Ishikawa, Y. Kusama, M. Takechi, T. Nishitani, A. Morioka, M. Sasao, M. Isobe, A. Krasilnikov, and Yu. A. Kaschuck
- 3646 **Scintillator probe diagnostic for high energy particles escaped from Large Helical Device**  
M. Nishiura, M. Isobe, T. Saida, M. Sasao, and D. S. Darrow
- 3649 **Two-dimensional potential profile and density measurements by use of an improved gold neutral beam probe**  
Y. Takemura, K. Ishii, A. Kojima, K. Hagiwara, Y. Miyata, Y. Masuda, T. Yamaguchi, A. Itakura, and T. Cho

*(Continued)*

- 3652 **Measurement of the magnetic field fluctuations by use of a gold neutral beam probe in the tandem mirror GAMMA 10**  
 Atsushi Kojima, K. Ishii, Y. Takemura, K. Hagsawa, Y. Miyata, Y. Masuda, T. Yamaguchi, A. Itakura, M. Ichimura, and T. Cho
- PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE PLASMA DIAGNOSTICS  
 X-RAY SPECTROSCOPY AND STREAK CAMERAS
- 3655 **Fluorescence spectroscopy as a diagnostic of the radiation environment in high energy density experiments (invited)**  
 D. J. Hoarty, C. C. Smith, E. L. Clark, J. M. Foster, S. G. Gales, G. Magelssen, J. Workman, W. M. Wood, S. Caldwell, R. Chrien, J. Sandoval, T. Sedillo, P. Walsh, B. Carpenter, S. Compton, and T. Perry
- 3660 **Spatially resolved spectra from a new x-ray imaging crystal spectrometer for measurements of ion and electron temperature profiles (invited)**  
 M. Bitter, K. W. Hill, B. Stratton, A. L. Roquemore, D. Mastrovito, S. G. Lee, J. G. Bak, M. K. Moon, U. W. Nam, G. Smith, J. E. Rice, P. Beiersdorfer, and B. S. Fraenkel
- 3666 **X-ray spectroscopy for high energy-density X pinch density and temperature measurements (invited)**  
 S. A. Pikuz, T. A. Shelkovenko, K. M. Chandler, M. D. Mitchell, D. A. Hammer, I. Y. Skobelev, A. S. Shlyaptseva, and S. B. Hansen
- 3672 **Monochromatic x-ray imaging experiments on the Sandia National Laboratories Z facility (invited)**  
 D. B. Sinars, G. R. Bennett, D. F. Wenger, M. E. Cuneo, D. L. Hanson, J. L. Porter, R. G. Adams, P. K. Rambo, D. C. Rovang, and I. C. Smith
- 3678 **Testing LaMgAl<sub>11</sub>O<sub>19</sub> crystal for x-ray spectroscopy**  
 H. Chen, P. Beiersdorfer, E. O. Baronova, I. I. Kalashnikova, and M. M. Stepanenko
- 3681 **Use of spherically bent crystals to diagnose wire array z pinches**  
 T. A. Shelkovenko, S. A. Pikuz, D. A. Hammer, D. J. Ampleford, S. N. Bland, S. C. Bott, J. P. Chittenden, and S. V. Lebedev
- 3684 **Bottom axial diagnostic package on Z**  
 T. J. Nash, T. W. L. Sanford, R. J. Leeper, G. A. Chandler, J. E. Bailey, T. A. Mehlhorn, C. D. Deeney, J. F. Seaman, J. McGurn, J. A. Torres, D. O. Jobe, R. C. Mock, T. Gilliland, D. S. Nielsen, J. Lucas, and T. Moore
- 3687 **Measurements of the counting statistics on RAR-2497 and DEF x-ray film**  
 Greg Dunham, G. A. Rochau, P. Lake, L. Nielsen-Weber, and D. Schuster
- 3690 **Time- and space-resolved elliptical crystal spectrometers for high energy density physics research**  
 P. W. Lake, J. E. Bailey, G. A. Rochau, T. C. Moore, D. Petmecky, and P. Gard
- 3693 **Research and development of x-ray imaging crystal spectrometers for KSTAR**  
 S. G. Lee, J. G. Bak, M. Bitter, K. Hill, U. W. Nam, Y. J. Kim, and M. K. Moon
- 3696 **Optimization of the lines of sight of the ITER x-ray crystal spectrometer diagnostic**  
 L. C. Ingesson, R. Barnsley, A. Malaquias, and M. O'Mullane
- 3699 **X-ray polarization spectroscopy for measurement of anisotropy of hot electrons generated with ultraintense laser pulse**  
 Yuichi Inubushi, Hiroaki Nishimura, Masayuki Ochiai, Shinsuke Fujioka, Yasukazu Izawa, Tohru Kawamura, Seiji Shimizu, Masaki Hashida, and Syuji Sakabe

(Continued)

- 3702 **Spectroscopic analysis of x-ray bursts from nichrome and conichrome X-pinch plasmas**  
K. M. Chandler, A. S. Shlyaptseva, N. D. Ouart, S. B. Hansen, M. D. Mitchell, S. A. Pikuz, T. A. Shelkovenko, D. A. Hammer, V. L. Kantsyrev, and D. A. Fedin
- 3705 **Operation of a single-photon-counting x-ray charge-coupled device camera spectrometer in a petawatt environment**  
C. Stoeckl, W. Theobald, T. C. Sangster, M. H. Key, P. Patel, B. B. Zhang, R. Clarke, S. Karsch, and P. Norreys
- 3708 **Studies of energetic electrons with space and time resolution in Mo and W X-pinch from measurements of x rays >9 keV**  
V. L. Kantsyrev, D. A. Fedin, A. S. Shlyaptseva, M. D. Mitchell, Byungmoo Song, S. A. Pikuz, T. A. Shelkovenko, K. M. Chandler, D. A. Hammer, and L. M. Maxson
- 3711 **Investigation of the radiation properties of L- and M-shell X-pinch plasma x-ray sources using a transmission grating spectrometer**  
D. A. Fedin, V. L. Kantsyrev, A. S. Shlyaptseva, M. D. Mitchell, B. M. Song, S. A. Pikuz, T. A. Shelkovenko, K. M. Chandler, D. A. Hammer, and L. M. Maxson
- 3714 **Temporal and spectral deconvolution of data from diamond, photoconductive devices**  
J. P. Knauer and N. C. Gindele
- 3717 **High-resolution compact Johann crystal spectrometer with the Livermore electron beam ion trap**  
D. L. Robbins, H. Chen, P. Beiersdorfer, A. Ya. Faenov, T. A. Pikuz, M. J. May, J. Dunn, and A. J. Smith
- 3720 **High-resolution crystal spectrometer for the 10–60 Å extreme ultraviolet region**  
P. Beiersdorfer, G. V. Brown, R. Goddard, and B. J. Wargelin
- 3723 **Flat-field grating spectrometer for high-resolution soft x-ray and extreme ultraviolet measurements on an electron beam ion trap**  
P. Beiersdorfer, E. W. Magee, E. Träbert, H. Chen, J. K. Lepson, M.-F. Gu, and M. Schmidt
- 3727 **Compact imaging Bragg spectrometer for fusion devices**  
G. Bertschinger, W. Biel, H. Jaegers, and O. Marchuk
- 3730 **X-ray calibration of the time resolved crystal spectrometer SXDHR-1t of the Ligne d'Intégration Laser**  
C. Reverdin, A. S. Morlens, B. Angelier, J. L. Bourgade, J. Y. Boutin, M. Briat, G. Charles, A. Duval, A. Estadieu, C. Cholet, D. Gontier, D. Husson, H. P. Jacquet, J. P. LeBreton, G. Lidove, B. Marchet, R. Marmoret, R. Maroni, P. Millier, J. Raimbourg, C. Remond, R. Rosch, G. Soullié, P. Stemmler, P. Troussel, J. L. Ulmer, B. Villette, and R. Wrobel
- 3734 **A high-resolution soft x-ray spectrometer on the MAST tokamak**  
M. J. Nelson, R. Barnsley, F. Keenan, H. Meyer, C. A. Bunting, P. G. Carolan, N. J. Conway, G. Cunningham, I. Lehane, and M. R. Tournianski
- 3737 **First tritium operation of ITER-prototype VUV spectroscopy on JET**  
I. H. Coffey, R. Barnsley, and JET EFDA Contributors
- 3740 **Convex crystal x-ray spectrometer for laser plasma experiments**  
M. May, R. Heeter, and J. Emig
- 3743 **Design study for International Thermonuclear Experimental Reactor high resolution x-ray spectroscopy array**  
R. Barnsley, M. O'Mullane, L. C. Ingesson, and A. Malaquias

(Continued)

- 3747 **X-ray line measurements with high efficiency Bragg crystals**  
A. Pak, G. Gregori, J. Knight, K. Campbell, D. Price, B. Hammel,  
O. L. Landen, and S. H. Glenzer
- 3750 **Development of M-shell x-ray spectroscopy and spectropolarimetry  
of z-pinch tungsten plasmas**  
A. Shlyaptseva, D. Fedin, S. Hamasha, C. Harris, V. Kantsyrev, P. Neill,  
N. Ouart, U. I. Safronova, P. Beiersdorfer, K. Boyce, G. V. Brown,  
R. Kelley, C. A. Kilbourne, and F. S. Porter
- 3753 **Filter-fluorescer diagnostic system for the National Ignition Facility**  
J. W. McDonald, R. L. Kauffman, J. R. Celeste, M. A. Rhodes,  
F. D. Lee, L. J. Suter, A. P. Lee, J. M. Foster, and G. Slark
- 3756 **Least-squares fit analysis program for the evaluation of spatially resolved  
x-ray spectra from tokamak plasmas**  
D. Mastrovito, M. Bitter, K. W. Hill, and M. F. Gu
- 3759 **Dante soft x-ray power diagnostic for National Ignition Facility**  
E. L. Dewald, K. M. Campbell, R. E. Turner, J. P. Holder, O. L. Landen,  
S. H. Glenzer, R. L. Kauffman, L. J. Suter, M. Landon, M. Rhodes,  
and D. Lee
- 3762 **X-ray spectroscopy with elliptical crystals and face-on framing cameras**  
R. F. Heeter, J. A. Emig, K. B. Fournier, S. B. Hansen, M. J. May,  
and B. K. F. Young
- 3765 **Time resolved spectroscopy of ultrashort pulse laser generated x rays  
using von Hámos crystal spectroscopy**  
Ronnie Shepherd, Patrick Audebert, Rex Booth, Bruce Young, Jim Bonlie,  
Don Nelson, Steve Shiromizu, Dwight Price, Douglas Norman, Jim Dunn,  
Klaus Widmann, and Paul Springer
- 3768 **Omega Dante soft x-ray power diagnostic component calibration  
at the National Synchrotron Light Source**  
K. M. Campbell, F. A. Weber, E. L. Dewald, S. H. Glenzer, O. L. Landen,  
R. E. Turner, and P. A. Waide
- 3772 **The Astro-E2 X-ray spectrometer/EBIT microcalorimeter x-ray spectrometer**  
Frederick Scott Porter, Greg V. Brown, Kevin R. Boyce, Richard L. Kelley,  
Caroline A. Kilbourne, Peter Beiersdorfer, Hui Chen, Stephane Terracol,  
Steven M. Kahn, and Andrew E. Szymkowiak
- 3775 **Velocity and metastable state population distributions of laser-ablated neodymium**  
Haiming Wang, Hiroari Miyatake, Hironori Ohba, Morihisa Saeki,  
Masabumi Miyabe, Takemasa Shibata, and Hideki Iimura
- 3777 **Application of the focusing x-ray spectrograph with crossed dispersion  
to investigations of X pinch plasmas**  
S. A. Pikuz, B. M. Song, T. A. Shelkovenko, K. M. Chandler, M. D. Mitchell,  
and D. A. Hammer
- PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE  
PLASMA DIAGNOSTICS  
MICROWAVES, REFLECTOMETRY, ECE, THOMSON
- 3780 **Diagnostics for edge pedestal research (invited)**  
A. W. Leonard
- 3787 **Simultaneous microwave imaging system for density and temperature  
fluctuation measurements on TEXTOR (invited)**  
H. Park, E. Mazzucato, T. Munsat, C. W. Domier, M. Johnson,  
N. C. Luhmann, Jr., J. Wang, Z. Xia, I. G. J. Classen, A. J. H. Donné,  
and M. J. van de Pol
- 3793 **Detailed characterization of plasma wave behavior using collective Thomson  
scattering (invited)**  
D. S. Montgomery, J. L. Kline, and T. E. Tierney, IV

(Continued)

- 3800 **High-resolution dual-polarization frequency modulated reflectometer density profile measurements on DIII-D**  
G. Wang, E. J. Doyle, W. A. Peebles, L. Zeng, T. L. Rhodes, S. Kubota, X. Nguyen, and N. A. Crocker
- 3804 **Influence of antenna aiming on ECE in MAST**  
Josef Preinhaelter, Jakub Urban, Pavol Pavlo, Vladimir Shevchenko, Martin Valovič, Linda Vahala, and George Vahala
- 3807 **Plasma resistivity profile measurement from an external radio-frequency magnetic coil**  
John T. Slough, Samuel P. Andreason, and Richard D. Milroy
- 3810 **Effects of asymmetry and target location on microwave imaging reflectometry**  
M. Ignatenko, A. Mase, L. G. Bruskin, Y. Kogi, and H. Hojo
- 3813 **Full-wave simulations on ultrashort-pulse reflectometry for helical plasmas**  
H. Hojo, A. Fukuchi, A. Itakura, and A. Mase
- 3816 **Global full-wave simulation of the Tore-Supra doppler reflectometer**  
F. da Silva, S. Heuroux, N. Lemoine, C. Honoré, P. Hennequin, M. Manso, and R. Sabot
- 3819 **Effects of relativistic frequency downshift on measurements of electron cyclotron emission in Large Helical Device plasma**  
M. Sato, A. Isayama, S. Inagaki, Y. Nagayama, K. Kawahata, and N. Iwama
- 3822 **Two-dimensional full-wave code for reflectometry simulations in TJ-II**  
E. Blanco, S. Heuroux, T. Estrada, J. Sánchez, and L. Cupido
- 3825 **X-mode reflectometry for magnetohydrodynamic activity associated with  $q=1$  surface measurements on Tore Supra**  
L. Vermare, F. Clairet, F. Gabillet, R. Sabot, A. Sirinelli, S. Heuroux, and G. Leclert
- 3828 **Improvement of the  $T_e$  profile on Joint European Torus measured by electron cyclotron emission**  
Patrick Blanchard, Elena de la Luna, Chris Gowers, and JET-EFDA Contributors
- 3831 **Electron cyclotron emission radiometer upgrade on the Joint European Torus (JET) tokamak**  
E. de la Luna, J. Sánchez, V. Tribaldos, JET-EFDA Contributors, G. Conway, W. Suttrop, J. Fessey, R. Prentice, C. Gowers, and J. M. Chareau
- 3834 **Upgrade of the X-mode reflectometry diagnostic for radial correlation measurements in the Joint European Torus**  
S. Hacquin, L. Meneses, L. Cupido, N. Cruz, L. Kokonchev, R. Prentice, and C. Gowers
- 3837 **Ultrashort-pulse reflectometer on LHD**  
Yuichiro Kogi, Kazuyuki Uchida, Atsushi Mase, Leonid Bruskin, Maxim Ignatenko, Tokihiko Tokuzawa, Yoshio Nagayama, and Kazuo Kawahata
- 3840 **Microwave scattering system design for  $\rho_e$  scale turbulence measurements on NSTX**  
D. R. Smith, E. Mazzucato, T. Munsat, H. Park, D. Johnson, L. Lin, C. W. Domier, M. Johnson, and N. C. Luhmann, Jr.
- 3843 **Evaluation of tapered slot antennas for use in multichannel reflectometers**  
K. Hattori, H. Tsugueda, O. Takabatake, H. Tobari, A. Ando, and M. Inutake

(Continued)

- 3846 **Electron density profile measurement using an ultrashort-pulsed radar reflectometer on large helical device**  
T. Kaneba, T. Tokuzawa, K. Kawahata, Y. Ito, Y. Nagayama, and LHD Experimental Group
- 3849 **10 kHz repetitive high-resolution TV Thomson scattering on TEXTOR**  
H. J. van der Meiden, C. J. Barth, T. Oyevaar, S. K. Varshney, A. J. H. Donné, M. Yu. Kantor, D. V. Kouprienko, A. Alexeev, W. Biel, and A. Pospieszczyk
- 3852 **Upgrade to the control system of the reflectometry diagnostic of ASDEX upgrade**  
S. Graça, J. Santos, M. E. Manso, and CFN Reflectometry Team
- 3855 **Frequency modulation continuous wave reflectometry measurements of plasma position in ASDEX Upgrade ELMy H-mode regimes**  
J. Santos, S. Hacquin, M. Manso, and ASDEX Upgrade Team
- 3859 **Electron cyclotron emission as a density fluctuation diagnostic**  
A. G. Lynn, P. E. Phillips, and A. Hubbard
- 3862 **Ion species mix measurements in DIII-D and International Thermonuclear Experimental Reactor using ion-ion hybrid layer reflectometry**  
W. W. Heidbrink, G. W. Watson, and K. H. Burrell
- 3865 **Frequency hopping millimeter wave reflectometer**  
L. Cupido, J. Sánchez, and T. Estrada
- 3868 **Ultrashort-pulse reflectometer performance on Sustained Spheromak Physics Experiment**  
C. W. Domier, N. C. Luhmann, Jr., Y. Roh, H. S. McLean, E. B. Hooper, and D. N. Hill
- 3871 **Design of an X-mode swept frequency modulation reflectometer for the measurement of KSTAR plasma density profiles (invited)**  
Y. Roh, C. W. Domier, and N. C. Luhmann, Jr.
- 3875 **Two-dimensional electron cyclotron emission imaging diagnostic for TEXTOR**  
J. Wang, C. W. Domier, Z. G. Xia, Y. Liang, N. C. Luhmann, Jr., H. Park, T. Munsat, E. Mazzucato, M. J. van de Pol, I. G. J. Classen, and A. J. H. Donné
- 3878 **Design, construction, and performance of a composite mirror for collecting Thomson scattered light from the large helical device plasma**  
K. Narihara, I. Yamada, H. Hayashi, and K. Yamauchi
- 3881 **Doppler backscattering system for measuring fluctuations and their perpendicular velocity on Tore Supra**  
P. Hennequin, C. Honoré, A. Truc, A. Quéméneur, N. Lemoine, J.-M. Chareau, and R. Sabot
- 3884 **Multipoint Thomson scattering diagnostic for the ETE tokamak**  
L. A. Berni, M. P. Alonso, and R. M. Oliveira
- 3887 **Use of fast scopes to enable Thomson scattering measurement in presence of fluctuating plasma light**  
H. S. McLean, J. Moller, and D. N. Hill
- 3891 **High resolution Thomson scattering for Joint European Torus (JET)**  
R. Pasqualotto, P. Nielsen, C. Gowers, M. Beurskens, M. Kempenaars, T. Carlstrom, D. Johnson, and JET-EFDA Contributors
- 3894 **Comparison of multialkali and GaAs photocathode detectors for Joint European Torus edge light detection and ranging Thomson scattering profiles**  
M. Kempenaars, P. Nielsen, R. Pasqualotto, C. Gowers, M. Beurskens, and JET-EFDA Contributors
- 3897 **Study of a CW, two-dimensional Thomson scattering diagnostic system**  
C. L. Hsieh, B. D. Bray, and C. Liu

*(Continued)*

- 3900 **Performance of the Thomson scattering diagnostic on Helical Symmetry Experiment**  
K. Zhai, F. S. B. Anderson, K. Willis, K. Likin, and D. T. Anderson
- 3903 **Design of core and edge Thomson scattering systems for Korea Superconducting Tokamak Advanced Research tokamak**  
H. G. Lee, J. H. Lee, D. Johnson, R. Ellis, R. Feder, and H. Park
- 3906 **Implementation of a high energy  $4\omega$  probe beam on the Omega laser**  
A. J. Mackinnon, S. Shiromizu, G. Antonini, J. Auerbach, K. Haney, D. H. Froula, J. Moody, G. Gregori, C. Constantin, C. Sorce, L. Divol, R. L. Griffith, S. Glenzer, J. Satariano, P. K. Whitman, S. N. Locke, E. L. Miller, R. Huff, K. Thorp, W. Armstrong, R. Bahr, W. Seka, G. Pien, J. Mathers, S. Morse, S. Loucks, and S. Stagnitto
- 3909 **Incorporation of fast laser beam shunting and a broadband polarizer in the MAST Thomson scattering systems**  
M. J. Walsh, P. G. Carolan, A. C. Darke, M. R. Dunstan, M. J. Forrest, R. B. Huxford, R. O'Gorman, K. Pechstedt, S. L. Prunty, and R. Scannell
- 3912 **Design and development of the large helical device TV Thomson scattering**  
I. Yamada, K. Narihara, H. Funaba, H. Hayashi, and LHD experimental group
- PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE PLASMA DIAGNOSTICS  
X-RAY IMAGING
- 3915 **Development of intense point x-ray sources for backlighting high energy density experiments (invited)**  
J. Workman, J. R. Fincke, P. Keiter, G. A. Kyrala, T. Pierce, S. Sublett, J. P. Knauer, H. Robey, B. Blue, S. G. Glendinning, and O. L. Landen
- 3921 **Multi-imaging x-ray streak camera for ultrahigh-speed two-dimensional x-ray imaging of imploded core plasmas (invited)**  
H. Shiraga, S. Fujioka, P. A. Jaanimagi, C. Stoeckl, R. B. Stephens, H. Nagatomo, K. A. Tanaka, R. Kodama, and H. Azechi
- 3926 **Energy resolved fast two-dimensional x-ray imaging for MFE plasmas (invited)**  
D. Pacella, R. Bellazzini, A. Brez, and M. Finkenthal
- 3930 **Compact optical technique for streak camera calibration**  
Perry Bell, Roger Griffith, Karla Hagans, Richard Lerche, Curt Allen, Terence Davies, Frans Janson, Ronald Justin, Bruce Marshall, and Oliver Sweningsen
- 3934 **Quantified reduction of wall material influx during *Hohlraum* experiments**  
Steven H. Batha and James R. Fincke
- 3937 **Two-dimensional spectrally resolved position-sensitive proportional counter for plasma imaging**  
D. Thorn and P. Beiersdorfer
- 3941 **Extreme ultraviolet imaging of wire array z-pinch experiments**  
S. N. Bland, D. J. Ampleford, S. C. Bott, S. V. Lebedev, J. B. A. Palmer, S. A. Pikuz, and T. A. Shelkovenko
- 3944 **Use of X-pinchs of diagnose behavior of low density CH foams on axis of wire array Z-pinchs**  
S. C. Bott, J. B. A. Palmer, D. J. Ampleford, S. N. Bland, J. P. Chittenden, and S. V. Lebedev
- 3947 **Correcting for gain effects in an x-ray framing camera in a cylindrical implosion experiment**  
C. J. Horsfield, K. W. Parker, S. D. Rothman, J. Fincke, and N. E. Lanier
- 3950 **X-ray imaging of an X-pinch plasma with a bubble compound refractive lens**  
C. K. Gary, S. A. Pikuz, M. D. Mitchell, K. M. Chandler, T. A. Shelkovenko, D. A. Hammer, and Yu. I. Dudchik

(Continued)

- 3953 **Three-dimensional plasma structure reconstruction from mutually orthogonal streaks of nonaxisymmetric laser-produced plasma plumes**  
Yong W. Kim and Hedok Lee
- 3956 **Optical and x-ray streak camera gain measurements**  
S. Ghosh, R. Boni, and P. A. Jaanimagi
- 3959 **Initial operation of the national spherical torus experiment fast tangential soft x-ray camera**  
B. C. Stratton, R. Feder, S. von Goeler, G. F. Renda, V. J. Mastrocola, and J. L. Lowrance
- 3962 **Concepts of x-ray diagnostics for WENDELSTEIN 7-X**  
A. Weller, S. Mohr, and C. Junghans
- 3966 **Close-in nosecone configuration and blast damage in point backlight x-ray radiography**  
J. R. Fincke, J. B. Workman, G. A. Kryala, P. J. Walsh, S. C. Evans, D. Tafoya, and D. J. Landers
- 3969 **Transmission grating streaked spectrometer for the diagnosis of soft x-ray emission from ultrahigh intensity laser heated targets**  
R. T. Eagleton and S. F. James
- 3974 **Preliminary design of the soft x-ray array tomographic diagnostic system for Korea Superconducting Tokamak Advanced Research (KSTAR) plasmas**  
Junghee Kim and Wonho Choe
- 3977 **Independent component analysis based filtering for penumbral imaging**  
Yen-Wei Chen, Xian-Hua Han, and Shinya Nozaki
- 3980 **Heuristic reconstructions of neutron penumbral images**  
Shinya Nozaki and Yen-Wei Chen
- 3983 **Grazing-incidence mirror streak camera diagnostic for emission measurements of imploding z pinches on the Sandia Z-machine**  
D. F. Wenger, D. B. Sinars, K. L. Keller, R. A. Aragon, L. E. Ruggles, W. W. Simpson, P. H. Primm, and J. L. Porter
- 3986 **Characterization of National Ignition Facility cryogenic beryllium capsules using x-ray phase contrast imaging**  
D. S. Montgomery, A. Nobile, and P. J. Walsh
- 3989 **Improved pinhole-apertured point-projection backlighter geometry**  
B. E. Blue, J. F. Hansen, and H. F. Robey
- 3992 **X-ray tomography systems for observations of the effects of radially sheared electric fields on fluctuations in plasmas**  
J. Kohagura, T. Cho, T. Numakura, M. Hirata, N. Yokoyama, T. Fukai, Y. Tomii, S. Tokioka, Y. Miyake, S. Kiminami, K. Shimizu, S. Miyoshi, M. Yoshida, and T. Kondoh
- 3995 **X-ray detection by direct modulation of an optical probe beam—Radsensor: Progress on development for imaging applications**  
Mark E. Lowry, Corey V. Bennett, Stephen P. Vernon, Richard Stewart, Rebecca J. Welty, John Heebner, Otto L. Landen, and Perry M. Bell
- 3998 **Preparation and characterization of pixelated phosphor screens for high-resolution linear imaging in the vacuum ultraviolet and x-ray ranges**  
L. Rodríguez-Barquero, B. Zurro, P. Martin, K. J. McCarthy, and A. Baciero
- 4001 **Image plates as x-ray detectors in plasma physics experiments**  
S. G. Gales and C. D. Bentley
- 4004 **Soft x-ray tomography system for the toroidal pinch experiment-RX reversed-field pinch**  
H. Koguchi, T. Shimada, T. Asai, Y. Yagi, Y. Hirano, and H. Sakakita

(Continued)

- 4007 **Spatially resolved bolometric measurement and electron temperature measurement using diode arrays**  
H. Koguchi, T. Shimada, T. Asai, Y. Yagi, Y. Hirano, and H. Sakakita
- 4010 **Temporal resolved x-ray penumbral imaging technique using heuristic image reconstruction procedure and wide dynamic range x-ray streak camera**  
Shinsuke Fujioka, Hiroyuki Shiraga, Hiroshi Azechi, Hiroaki Nishimura, Yasukazu Izawa, Shinya Nozaki, and Yen-wei Chen
- 4013 **High resolution soft x-ray tomography in the Madison Symmetric Torus**  
P. Franz, F. Bonomo, G. Gadani, L. Marrelli, P. Martin, P. Piovesan, G. Spizzo, B. E. Chapman, and M. Reyfman
- 4017 **Coded penumbral imaging for improvements of signal-to-noise ratio**  
Yen-Wei Chen, Hiroki Yamamoto, and Shinya Nozaki
- 4020 **“Optical” soft x-ray arrays for fluctuation diagnostics in magnetic fusion energy experiments**  
L. F. Delgado-Aparicio, D. Stutman, K. Tritz, M. Finkenthal, R. Kaita, L. Roquemore, D. Johnson, and R. Majeski
- 4023 **Development of background reduced Fresnel phase zone plate**  
Yohei Tamari and Hiroshi Azechi
- 4026 **Soft x-ray ( $0.2 < E < 2.0$  keV) imager for z-pinch plasma radiation sources**  
B. H. Failor, N. Qi, J. S. Levine, H. Sze, and E. M. Gullickson
- 4029 **Design of a multilayer mirror monochromatic x-ray imager for the Z accelerator**  
B. Jones, C. Deeney, A. Pirela, C. Meyer, D. Petmecky, P. Gard, R. Clark, and J. Davis
- 4033 **Current profile reconstruction using electron temperature imaging diagnostics**  
K. Tritz, D. Stutman, L. F. Delgado-Aparicio, M. Finkenthal, D. Pacella, R. Kaita, B. Stratton, and S. Sabbagh
- 4037 **Static and time-resolved 10–1000 keV x-ray imaging detector options for NIF**  
O. L. Landen, P. M. Bell, J. W. McDonald, H.-S. Park, F. Weber, J. D. Moody, M. E. Lowry, and R. E. Stewart
- 4040 **Shielding a streak camera from hard x rays**  
M. B. Schneider, C. Sorce, K. Loughman, J. Emig, C. Bruns, C. Back, P. M. Bell, S. Compton, D. Hargrove, J. P. Holder, O. L. Landen, T. S. Perry, R. Shepherd, and B. K. Young
- 4042 **Preliminary performance measurements for a streak camera with a large-format direct-coupled charge-coupled device readout**  
R. A. Lerche, J. W. McDonald, R. L. Griffith, G. Vergel de Dios, D. S. Andrews, A. W. Huey, P. M. Bell, O. L. Landen, P. A. Jaanimagi, and R. Boni
- 4045 **Framed, 16-image, Kirkpatrick–Baez microscope for laser–plasma x-ray emission**  
F. J. Marshall, J. A. Oertel, and P. J. Walsh
- 4048 **Characteristics of high energy  $K\alpha$  and Bremsstrahlung sources generated by short pulse petawatt lasers**  
H.-S. Park, N. Izumi, M. H. Key, J. A. Koch, O. L. Landen, P. K. Patel, T. W. Phillips, and B. B. Zhang
- 4051 **Imaging detectors for 20–100 keV x-ray backlighters in high-energy-density experimental science petawatt experiments**  
J. E. Wickersham, H.-S. Park, P. M. Bell, J. A. Koch, O. L. Landen and J. D. Moody
- 4054 **Progress on the development of a single line of sight x-ray framing camera**  
D. K. Bradley, J. P. Holder, C. M. Damian, K. W. Piston, P. M. Bell, A. K. L. Dymoke-Bradshaw, and J. D. Hares

(Continued)

- 4057 **Static characterization of aerogel targets for high energy density physics using x-ray radiography**  
Paul A. Keiter and George A. Kyrala
- 4060 **Characterization of the series 1000 camera system**  
J. R. Kimbrough, J. D. Moody, P. M. Bell, and O. L. Landen
- PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE PLASMA DIAGNOSTICS  
OPTICAL SYSTEMS, IR TO X-RAY
- 4063 **KB-PJX—A streaked imager based on a versatile x-ray microscope coupled to a high-current streak tube (invited)**  
O. V. Gotchev, P. A. Jaanimagi, J. P. Knauer, F. J. Marshall, and D. D. Meyerhofer,
- 4069 **High definition imaging in the Mega Amp Spherical Torus spherical tokamak from soft x rays to infrared (invited)**  
P. G. Carolan, A. Patel, N. J. Conway, R. J. Akers, C. A. Bunting, G. F. Counsell, J. Dowling, M. R. Dunstan, A. Kirk, F. Lott, M. N. Price, M. R. Tournianski, M. J. Walsh, and The MAST Team
- 4077 **High-speed optical diagnostic that uses interference filters to measure Doppler shifts**  
S. F. Paul, C. J. Cates, M. E. Mael, D. A. Maurer, G. A. Navratil, R. M. Paul, T. S. Pedersen, and M. A. Shilov
- 4082 **Analysis of images from videocameras in the Frascati Tokamak Upgrade tokamak**  
R. De Angelis, S. Migliori, S. Borioni, G. Bracco, S. Pierattini, and A. Perozziello
- 4085 **Measurement of low frequency plasma fluctuations with a visible light detector in GAMMA 10**  
H. Higaki, M. Ichimura, K. Horinouchi, K. Nakagome, S. Kakimoto, Y. Yamaguchi, K. Ide, D. Inoue, H. Nagai, M. Yoshikawa, Y. Nakashima, and T. Cho
- 4088 **Absolute calibration of vacuum ultraviolet spectrograph system for plasma diagnostics**  
M. Yoshikawa, Y. Kubota, T. Kobayashi, M. Saito, N. Numada, Y. Nakashima, T. Cho, H. Koguchi, Y. Yagi, and N. Yamaguchi
- 4091 **Laser-induced fluorescence measurements of three plasma species with a tunable diode laser**  
Amy M. Keesee, Earl E. Scime, and Robert F. Boivin
- 4094 **Diagnostic system of H $\alpha$  emission on neutral beam injection experiments in the GAMMA10 central cell**  
Y. Higashizono, Y. Nakashima, T. Ohki, Y. Kubota, M. Yoshikawa, M. K. Islam, K. Watanabe, T. Ogita, T. Kobayashi, R. Murakami, M. Yamada, T. Cho, M. Shoji, and S. Kobayashi
- 4097 **Z<sub>eff</sub> from spectroscopic bremsstrahlung measurements at ASDEX Upgrade and JET**  
H. Meister, R. Fischer, L. D. Horton, C. F. Maggi, D. Nishijima, ASDEX Upgrade Team, C. Giroud, K.-D. Zastrow, JET-EFDA Contributors, and B. Zaniol
- 4100 **Novel Doppler laser radar for diagnostics in fusion reactors**  
Madhavan Menon and Anthony Slotwinski
- 4103 **Three-dimensional laser-induced fluorescence measurements in a helicon plasma**  
R. Hardin, X. Sun, and E. E. Scime

*(Continued)*

- 4106 **Analysis of visible light images from a fast-gated intensified charge coupled device camera during flux rope interaction and magnetic reconnection**  
E. Hemsing, I. Furno, T. Intrator, and D. Wei
- 4109 **Calculation of edge toroidal current density distributions from DIII-D lithium beam measurements using Ampère's law**  
D. M. Thomas, A. W. Leonard, and H. W. Mueller
- 4112 **Near infrared spectroscopy of the divertor region in the Alcator C-Mod tokamak**  
I. Furno and G. A. Wurden
- 4115 **Development of the megahertz planar laser-induced fluorescence diagnostic for plasma turbulence visualization**  
Aleksy Kuritsyn and Fred M. Levinton
- 4118 **Beam emission spectroscopy measurement for density fluctuations in compact helical system**  
Tetsutarou Oishi, Satoru Tanaka, Shinichiro Kado, Mikirou Yoshinuma, Katsumi Ida, Shoichi Okamura, and CHS group
- 4121 **Measurement technique of electric field using ultraviolet/visible spectroscopy in cylindrical plasmas**  
T. Kobayashi, M. Yoshikawa, Y. Kubota, M. Saito, M. Numada, K. Ishii and T. Cho
- 4124 **Multiplexing thermography for International Thermonuclear Experimental Reactor divertor targets**  
K. Itami, T. Sugie, G. Vayakis, and C. Walker
- 4129 **Multichannel and multicolour infrared thermography in Tore Supra**  
R. Reichle, C. Pocheau, C. Balorin, E. Delchambre, C. Desgrange, D. Guilhem, S. Henry, P. Messina, and H. Roche
- 4133 **Plasma radiometry with 30 chord resolution for fast transients in the DIII-D tokamak**  
D. S. Gray, E. M. Hollmann, S. C. Luckhardt, J. Chalfant, L. Chousal, R. Hernandez, E. Jones, and A. G. Kellman
- 4136 **Charge exchange spectroscopy by Fabry–Pérot spectrometer in W7-AS**  
M. Yoshinuma, K. Ida, and J. Baldzuhn
- 4139 **AXUV bolometer and Lyman- $\alpha$  camera systems on the TCV tokamak**  
A. W. Degeling, H. Weisen, A. Zabolotsky, B. P. Duval, R. A. Pitts, M. Wischmeier, P. Lavanchy, Ph. Marmillod, and G. Pochon
- 4142 **Measurement of impurity emission profiles in CHS Plasma using AXUV photodiode arrays and VUV bandpass filters**  
C. Suzuki, B. J. Peterson, and K. Ida
- 4145 **Versatile multiwavelength imaging diagnostic in the MAST spherical tokamak**  
A. Patel, P. G. Carolan, N. J. Conway, C. A. Bunting, and R. J. Akers
- 4149 **Ultraviolet imaging of a magneto–plasmadynamic thruster**  
G. Spizzo, P. Franz, G. Gadani, L. Marrelli, P. Martin, F. Paganucci, and P. Rossetti
- 4152 **Optical and electrical diagnostics for the investigation of edge turbulence in fusion plasmas**  
R. Cavazzana, P. Scarin, G. Serianni, M. Agostini, F. Degli Agostini, V. Cervaro, L. Lotto, Y. Yagi, H. Sakakita, H. Koguchi, and Y. Hirano
- 4155 **Measuring one-dimensional and two-dimensional impurity density profiles on TEXTOR using combined charge exchange-beam emission spectroscopy and ultrasoft x-ray tomography**  
M. De Bock, K. Jakubowska, M. von Hellermann, R. Jaspers, A. J. H. Donné, and L. Shmaenok
- 4158 **Exploiting a transmission grating spectrometer**  
Ronald E. Bell

*(Continued)*

- 4162 **Diagnostic method for the measurement of coherent magnetic field fluctuations**  
F. M. Levinton and Å. Fredriksen
- 4165 **High resolution transmission grating spectrometer for edge toroidal rotation measurements of tokamak plasmas**  
A. Graf, M. May, P. Beiersdorfer, E. Magee, M. Lawrence, and J. Rice
- 4168 **Full-aperture backscatter measurements on the National Ignition Facility**  
D. H. Froula, D. Bower, M. Chrisp, S. Grace, J. H. Kamperschroer, T. M. Kelleher, R. K. Kirkwood, B. MacGowan, T. McCarville, N. Sewall, F. Y. Shimamoto, S. J. Shiromizu, B. Young, and S. H. Glenzer
- 4171 **Transmitted laser beam diagnostic at the Omega laser facility**  
C. Niemann, G. Antonini, S. Compton, S. H. Glenzer, D. Hargrove, J. D. Moody, R. K. Kirkwood, V. Rekow, J. Satariano, C. Sorce, W. Armstrong, R. Bahr, R. Keck, G. Pien, W. Seka, and K. Thorp
- 4174 **Calibration of initial measurements from the full aperture backscatter system on the National Ignition Facility**  
R. K. Kirkwood, T. McCarville, D. H. Froula, B. Young, D. Bower, N. Sewall, C. Niemann, M. Schneider, J. Moody, G. Gregori, F. Holdener, M. Chrisp, B. J. MacGowan, S. H. Glenzer, and D. S. Montgomery
- 4177 **Full aperture backscatter station measurement system on the National Ignition Facility**  
D. E. Bower, T. J. McCarville, S. S. Alvarez, L. E. Ault, M. D. Brown, M. P. Chrisp, C. M. Damian, W. J. DeHope, D. H. Froula, S. H. Glenzer, S. E. Grace, K. Gu, F. R. Holdener, C. K. Huffer, J. H. Kamperschroer, T. M. Kelleher, J. R. Kimbrough, R. Kirkwood, D. W. Kurita, A. P. Lee, F. D. Lee, I. T. Lewis, F. J. Lopez, B. J. MacGowan, M. W. Poole, M. A. Rhodes, M. B. Schneider, N. R. Sewall, F. Y. Shimamoto, S. J. Shiromizu, D. Voloshin, A. L. Warrick, C. R. Wendland, and B. K. Young
- 4180 **Determination of electron temperature from spectral line intensity decay for radiation dominated plasmas**  
C. A. Michael and J. Howard
- 4183 **Implementation of a near backscattering imaging system on the National Ignition Facility**  
A. J. Mackinnon, T. McCarville, K. Piston, C. Niemann, G. Jones, I. Reinbachs, R. Costa, J. Celeste, G. Holtmeier, R. Griffith, R. Kirkwood, B. MacGowan, S. H. Glenzer, and M. R. Latta
- 4187 **Development of magnetic field mapping via heavy ion beam spectral imaging**  
D. R. Demers, K. A. Connor, P. M. Schoch, R. J. Radke, J. K. Anderson, D. Craig, and D. J. Den Hartog
- 4190 **NSTX tangential divertor camera**  
A. L. Roquemore, Ted Biewer, D. Johnson, S. J. Zweben, Nobuhiro Nishino, and V. A. Soukhanovskii
- 4193 **Design aspects of a MSE diagnostic for ITER**  
T. A. Casper, J. Jayakumar, M. A. Makowski, and R. Ellis
- 4196 **High speed movies of turbulence in Alcator C-Mod**  
J. L. Terry, S. J. Zweben, B. Bose, O. Grulke, E. S. Marmor, J. Lowrance, V. Mastrocola, and G. Renda

*(Continued)*

PROCEEDINGS OF THE 15TH TOPICAL CONFERENCE ON HIGH-TEMPERATURE  
 PLASMA DIAGNOSTICS  
 SYSTEM DEVELOPMENT, ENGINEERING, ENVIRONMENT ISSUES, DATA ANALYSIS

- 4200 **Target diagnostic technology research and development for the LLNL ICF and HED program (invited)**  
 P. M. Bell, O. L. Landen, F. A. Weber, M. E. Lowry, C. V. Bennett,  
 J. R. Kimbrough, J. D. Moody, J. P. Holder, R. A. Lerche, R. L. Griffith,  
 H. S. Park, R. Boni, P. A. Jaanimagi, and T. Davies
- 4204 **New constraints for plasma diagnostics development due to the harsh environment of MJ class lasers (invited)**  
 J. L. Bourgade, V. Allouche, J. Baggio, C. Bayer, F. Bonneau, C. Chollet,  
 S. Darbon, L. Disdier, D. Gontier, M. Houry, H. P. Jacquet, J. P. Jadaud,  
 J. L. Leray, I. Masclet-Gobin, J. P. Negre, J. Raimbourg, B. Villette,  
 I. Bertron, J. M. Chevalier, J. M. Favier, J. Gazave, J. C. Gomme,  
 F. Malaise, J. P. Seaux, V. Yu Glebov, P. Jaanimagi, C. Stoeckl,  
 T. C. Sangster, G. Pien, R. A. Lerche, and E. R. Hodgson
- 4213 **Deposition diagnostics for next-step devices (invited)**  
 C. H. Skinner, A. L. Roquemore, the NSTX team, A. Bader,  
 and W. R. Wampler
- 4219 **Integrating diagnostic data analysis for W7-AS using Bayesian graphical models**  
 J. Svensson, A. Dinklage, J. Geiger, A. Werner, and R. Fischer
- 4222 **Target diagnostics for the future AWE Orion laser facility**  
 Kevin Oades, Andrew Evans, Gary Stark, John Foster, Richard Eagleton,  
 and Eugene Clark
- 4225 **Electromagnetic pulse generation within a petawatt laser target chamber**  
 M. J. Mead, D. Neely, J. Gauoin, R. Heathcote, and P. Patel
- 4228 **Development of an integrated pellet diagnostic system for fueling pellets**  
 Y. Kubota, M. Yoshikawa, Y. Nakashima, H. Yamada, and R. Sakamoto
- 4231 **Method to deduce local impurity transport quantities from the evolution of tomographically reconstructed bolometer signals during tracer injection at TJ-II**  
 B. Zurro, M. A. Ochando, A. Baciero, K. J. McCarthy, F. Medina,  
 A. López-Sánchez, D. Rapisarda, D. Jimenez, A. Fernández, I. Pastor,  
 J. Herranz, and R. Dux
- 4234 **Electromagnetic compatibility management for fast diagnostic design**  
 J. Raimbourg
- 4237 **Integrated data analysis of fusion diagnostics by means of the Bayesian probability theory**  
 R. Fischer and A. Dinklage
- 4240 **Electron emissive electrode for the plasma biasing experiment on tokamak ISTTOK**  
 H. Figueiredo, I. S. Nedzelskiy, C. Silva, C. A. F. Varandas, J. A. C. Cabral,  
 and R. M. O. Galvão
- 4243 **ITER diagnostics: Integration and engineering aspects**  
 C. I. Walker, A. E. Costley, K. Itami, T. Kondoh, T. Sugie, G. Vayakis,  
 and A. Malaquias
- 4247 **Point-to-point analysis of MSE data for plasma diagnostics and control**  
 R. Giannella, N. C. Hawkes, R. Jayakumar, M. Makowski, and L. Zabeo
- 4251 **Multi-tier approach for data acquisition programming in the TJ-II remote participation system**  
 J. Vega, E. Sánchez, A. Portas, M. Ruiz, E. Barrera, and S. López
- 4254 **TJ-II wave forms analysis with wavelets and support vector machines**  
 S. Dormido-Canto, G. Farias, R. Dormido, J. Vega, J. Sánchez,  
 M. Santos, and The TJ-II Team

(Continued)

- 4258 **Development of cooled UV, visible and IR windows for quasicontinuous operation of the W7-X stellarator**  
R. König, O. Ogorodnikova, D. Hildebrandt, K. Grosser, C. von Sehren, J. Baldzuhn, R. Burhenn, Ph. Mertens, A. Pospieszczyk, B. Schweer, H. Schmidt, and T. Klinger
- 4261 **Distributed real time data processing architecture for the TJ-II data acquisition system**  
M. Ruiz, E. Barrera, S. López, D. Machón, J. Vega, and E. Sánchez
- 4265 **Real-time digital signal processor-based system for MHD mode identification in ISTTOK**  
B. B. Carvalho, H. Fernandes, J. Sousa, and C. A. F. Varandas
- 4268 **Time–frequency analysis of nonstationary fusion plasma signals: A comparison between the Choi–Williams distribution and wavelets**  
A. C. A. Figueiredo, M. F. F. Nave, and EFDA-JET contributors
- 4271 **PCI data acquisition and signal processing hardware modules for long pulse operation**  
J. Sousa, A. J. N. Batista, A. Combo, R. Pereira, Miguel Correia, N. Cruz, P. Carvalho, Carlos Correia, and C. A. F. Varandas
- 4274 **On the use of MHD mode analysis as a technique for determination of  $q$ -profiles in JET plasmas**  
M. F. F. Nave, D. Borba, R. Galvão, S. Hacquin, B. Alper, C. Challis, S. Gerasimov, N. Hawkes, J. Mailloux, S. Sharapov, C. Boswell, M. Brix, E. Joffrin, E. de la Luna, P. Smeulders, and EFDA-JET Contributors
- 4278 **Investigation of the time-delay estimation method for turbulent velocity inference**  
C. Holland, G. R. Tynan, G. R. McKee, and R. J. Fonck
- 4281 **Single channel analog data links for use with high bandwidth recording systems for the National Ignition Facility**  
Vu Tran, Corey V. Bennett, Paul D. Sargis, Joseph R. Kimbrough, Perry M. Bell, and Jerome J. Blair
- 4284 **Time resolved neutron flux diagnostics for quasi-steady-state operation study of the HT-7 tokamak**  
Yubao Zhu, Juequan Chen, and Guiming Li
- 4287 **Plasma bolometry using a multislit shutter with piezoelectric actuator**  
Boris V. Kuteev, Andrew A. Outkine, Pavel G. Gabdullin, Artem Yu. Kostrioukov, and Vladimir G. Kapralov
- 4289 **Separatrix radius measurement of field-reversed configuration plasma in FRX-L**  
S. Y. Zhang, E. M. Tejero, J. M. Taccetti, G. A. Wurden, T. P. Intrator, W. J. Wagenaar, and R. Perkins
- 4293 **On the interpretation of fluctuation and  $E \times B$  turbulent transport measured by Langmuir probes in fusion plasmas**  
E. Calderón, C. Hidalgo, M. A. Pedrosa, and C. Silva
- 4296 **Scanning internal probe for plasma particle, fluctuation, and LIF tomographic measurements**  
Costel Biloiu, Earl Scime, Xuan Sun, and Brendan McGeehan
- 4299 **Measurement of the rotational velocity in Hanbit mirror device by using the Gundestrup-emissive-triple probe system**  
K.-S. Chung, G. Y. Kwak, Y.-S. Choi, M.-J. Lee, J. G. Bak, and M. Kwon
- 4302 **Internal probe array for the measurement of radial electric field**  
Samuel P. Andreason and John T. Slough
- 4305 **Performance of the magnetic sensor and the integrator for the KSTAR magnetic diagnostics**  
J. G. Bak, S. G. Lee, the KSTAR Project Team, and DeRac Son

(Continued)

- 4308 **Edge plasma measurements near the minimum-B anchor cell of GAMMA10 using Langmuir probe and calorimeter arrays**  
Y. Nakashima, M. K. Islam, T. Natori, I. Katanuma, T. Ohki, K. Watanabe, Y. Higashizono, T. Cho, and Y. Ishimoto
- 4311 **Design of the new magnetic sensors for Joint European Torus**  
V. Coccoresse, R. Albanese, H. Altmann, S. Cramp, T. Edlington, K. Fullard, S. Gerasimov, S. Huntley, N. Lam, A. Loving, V. Riccardo, F. Sartori, C. Marren, E. McCarron, C. Sowden, J. Tidmarsh, JET-EFDA Contributors, F. Basso, A. Cenedese, G. Chitarin, F. DegliAgostini, L. Grando, D. Marcuzzi, S. Peruzzo, N. Pomaro, and E. R. Solano
- 4314 **Fluctuation measurements using a five-pin triple probe in the Joint European Torus boundary plasma**  
C. Silva, B. Gonçalves, C. Hidalgo, M. A. Pedrosa, K. Erents, G. Matthews, and R. A. Pitts
- 4317 **Ion measurement of the edge plasma in the GAMMA10 tandem mirror device with an ion sensitive probe**  
T. Sekine, T. Saito, Y. Tatematsu, T. Yasuoka, H. Ikegami, D. Nagai, K. Nozaki, M. Ichimura, H. Higaki, and T. Cho
- 4320 **Supersonic gas injector for fueling and diagnostic applications on the National Spherical Torus Experiment**  
V. A. Soukhanovskii, H. W. Kugel, R. Kaita, R. Majeski, and A. L. Roquemore
- 4324 **Radiation-induced thermoelectric sensitivity (RITES) in ITER prototype magnetic sensors**  
G. Vayakis, T. Sugie, T. Kondoh, T. Nishitani, E. Ishitsuka, M. Yamauchi, H. Kawashima, and T. Shikama
- 4328 **Tunnel probes for measurements of the electron and ion temperature in fusion plasmas**  
J. P. Gunn, R. Schrittwieser, P. Balan, C. Ioniță, J. Stöckel, J. Adámek, I. Ďuran, M. Hron, R. Pánek, O. Bařina, R. Hrach, M. Vicher, G. Van Oost, T. Van Rompuy, and E. Martines
- 4331 **Arrangement of emissive and cold probes for fluctuation and Reynolds stress measurements**  
C. Ioniță, P. Balan, R. Schrittwieser, H. F. C. Figueiredo, C. Silva, C. A. F. Varandas, and R. M. O. Galvão
- 4334 **Effect of electron temperature fluctuations on slowly swept Langmuir probe measurements**  
D. L. Rudakov, J. A. Boedo, R. A. Moyer, P. C. Stangeby, A. McLean, and J. G. Watkins
- 4338 **Development, tests, and data acquisition of the integrated system of internal sensors for RFX**  
G. Serianni, T. Bolzonella, R. Cavazzana, G. Marchiori, N. Pomaro, L. Lotto, M. Monari, and C. Taliercio
- 4341 **Determination of velocity shears in a simple magnetized torus by means of a combined Langmuir and Mach probe**  
C. Riccardi, R. Barni, and Å. Fredriksen
- 4344 **Observations of sheared radial electric-field effects on turbulence suppression**  
M. Yoshida, T. Cho, M. Hirata, S. Tokioka, Y. Miyake, T. Numakura, J. Kohagura, and S. Miyoshi
- 4347 **Fast neutral pressure gauges in NSTX**  
R. Raman, H. W. Kugel, R. Gernhardt, T. Provost, T. R. Jarboe, and V. Soukhanovskii