

# **4th International Workshop & Summer School on Plasma Physics 2010**

**Journal of Physics: Conference Series Volume 516**

**Kiten, Bulgaria  
5-10 July 2010**

**ISBN: 978-1-63439-297-6  
ISSN: 1742-6588**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© by the Institute of Physics  
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact the Institute of Physics  
at the address below.

Institute of Physics  
Dirac House, Temple Back  
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481  
Fax: 44 1 17 920 0979

[techtracking@iop.org](mailto:techtracking@iop.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Table Of Contents

## PCRGU

### PLASMA SOURCES, DIAGNOSTIC AND TECHNOLOGY

<b>Microwave Measurement Of Electrical Fields In Different Media – Principles, Methods And Instrumentation</b> .....	1
<i>P. Dankov</i>	
<b>Microwave Plasma Torches Used For Hydrogen Production</b> .....	12
<i>F. Dias, N. Bundaleska, J. Henriques, E. Tatarova, C. Ferreira</i>	
<b>Energetic Hydrogen Atoms In High Frequency Plasmas</b> .....	22
<i>E. Felizardo, E. Tatarova, F. Dias, C. Ferreira, B. Gordiets</i>	
<b>Microwave N<sub>2</sub>-Ar Plasma Torch</b> .....	30
<i>J. Henriques, E. Tatarova, F. Dias, C. Ferreira</i>	
<b>Excitation Of Mercury Atoms In Nitrogen Post-Discharge</b> .....	40
<i>F. Krcma, I. Bockova, V. Mazankova, I. Soural, A. Hrdlicka, V. Kanicky</i>	
<b>Structure And Electrochemical Properties Of Track Membranes With A Polymer Layer Obtained By Plasma Polymerization Of Acetylene</b> .....	50
<i>L. Kravets, S. Dmitriev, V. Satulu, B. Mitu, G. Dinescu</i>	
<b>DC Underwater Capillary Discharge With Symmetrical Hole: Diagnostics And Pumping Effect</b> .....	56
<i>I. Halamova, A. Nikiforov, F. Krcma, C. Leys</i>	
<b>Destruction Of Direct Blue 106 Dye In Underwater Discharge</b> .....	60
<i>L. Nemcova, F. Krcma, A. Nikiforov, C. Leys</i>	
<b>Modified By Air Plasma Polymer Tack Membranes As Drainage Material For Antiglaucomatous Operations</b> .....	64
<i>T. Ryazantseva, L. Kravets, V. Elinson</i>	
<b>Investigation Of The NBI Heated Plasma On The Globus-M Tokamak With The Use Of Thomson Scattering Diagnostics</b> .....	68
<i>G. Kurskiev, S. Tolstyakov, V. Gusev, M. Kochergin, N. Khromov, A. Melnik, V. Minaev, E. Mukhin, M. Patrov, Y. Petrov, N. Sakharov, V. Semenov, I. Senichenkov</i>	
<b>Advanced Probe Diagnostics For Measurement Of Electromagnetic Properties Of Turbulent Structures At The Plasma Edge Of The TJ-II Stellarator</b> .....	72
<i>K. Kovarik, I. Duran, M. Hron, C. Hidalgo, D. Carralero, M. Pedrosa</i>	

### PLASMA MODELLING AND FUNDAMENTALS

<b>Adhesive Properties Of PTFE Modified By DC Discharge</b> .....	76
<i>A. Gilman, M. Piskarev, M. Yablokov, A. Kechek'yan, A. Kuznetsov</i>	
<b>Landau Damping In Space Plasmas With Two Electron Temperature Non-Maxwellian Distribution Functions</b> .....	82
<i>M. Qureshi, S. Sehar, H. Shah</i>	
<b>A Review On Lamb's Atmospheric Oscillations Using Initial Value Problem Approach</b> .....	90
<i>A. Gonzalez</i>	
<b>The Influence Of A Semi-Infinite Atmosphere On Solar Oscillations</b> .....	94
<i>A. Gonzalez</i>	
<b>Initial Value Problem Approach Of Two Regions Of System Solar: The Continuous Spectrum</b> .....	98
<i>A. Gonzalez</i>	
<b>Differential Cross Section In PIC-MCC Simulation Of Plasma-Solid Interaction</b> .....	102
<i>T. Ibehej, R. Hrach</i>	
<b>Comparison Of Several Algorithms Of The Electric Force Calculation In Particle Plasma Models</b> .....	106
<i>J. Lachnitt, R. Hrach</i>	
<b>Monte Carlo Simulation Of A Sputtering Hollow-Cathode Discharge For Laser Applications</b> .....	112
<i>S. Karatodorov, D. Mihailova, J. Van Dijk, J. Van Der Mullen, M. Grozeva</i>	
<b>Random Transition Between Two Temperatures Profiles In Magnetized Plasma</b> .....	116
<i>N. Pometscu, B. Weyssow</i>	
<b>Experimental Research Of Sliding Surface Distributed Nanosecond Discharge In Supersonic Air Flow</b> .....	120
<i>I. Belysheva, I. Mursenkova, A. Chvyreva</i>	

## **FUSION PLASMA AND MATERIALS**

<b>Simulation Of Defects In Fusion Plasma First Wall Materials</b> .....	125
<i>T. Troev, N. Nankov, T. Yoshiie</i>	
<b>Non-Destructive Research Methods Applied On Materials For The New Generation Of Nuclear Reactors</b> .....	136
<i>I. Bartosova, V. Slugen, J. Veternikova, S. Sojak, M. Petriska, A. Bouhaddane</i>	
<b>Investigation Of Materials For Fusion Power Reactors</b> .....	143
<i>A Bouhaddane, V Slugen, S Sojak, J Veternikova, M Petriska, I Bartosova</i>	
<b>Influence Of The Oblique Magnetic Field On The Secondary Electron Emission From The Plasma Facing Materials In Fusion Reactor</b> .....	150
<i>I. Berezina, I. Tsvetkov</i>	
<b>Hydrogen Retention In Volumetric CFC Structures</b> .....	156
<i>A. Airapetov, L. Begrambekov, S. Bremond, D. Douai, A. Kuzmin, Y. Sadovsky, P. Shigin, S. Vergasov</i>	
<b>Laser Guiding Through An Axially Non-Uniform Collisional Plasma Channel</b> .....	161
<i>A. Singh, N. Singh</i>	
<b>Modelling And Simulation Of Gyrotrons For ITER</b> .....	168
<i>M. Damyanova, S. Kern, S. Illy, M. Thumm, S. Sabchevski, I. Zhelyazkov, E. Vasileva</i>	
<b>On The Current Layer In The Run-Down Phase Of The Plasma Focus Discharge</b> .....	174
<i>S. Zapryanov, V. Yordanov, A. Blagoev</i>	
<b>Comparison The Results Of Numerical Simulation And Experimental Results For Amirkabir Plasma Focus Facility</b> .....	179
<i>S. Goudarzi, R. Amrollahi, M. Sharak</i>	
<b>Experimental Results Of Breakdown In "Dena" Plasma Focus Device</b> .....	183
<i>S. Goudarzi, S. Hoseinian, A. Raeisdana</i>	
<b>Measurement And Analysis Of The Radiation Losses In DAMAVAND Tokamak</b> .....	186
<i>S. Goudarzi, A. Raeisdana</i>	
<b>Avoided Crossings Of Modes Of A Finite Target With Adiabatic Shaping In Inertial Fusion Implosions</b> .....	190
<i>A. Gonzalez</i>	
<b>Positron Momentum Calculation Of Defects In A-Fe And Fe-Cr Containing Hydrogen And Helium</b> .....	194
<i>E. Popov, P. Staykov, K. Berovski, S. Peneva, N. Djourelou, T. Troev</i>	
<b>Author Index</b>	