## 3<sup>RD</sup> SCHOOL AND WORKSHOP ON SPACE PLASMA PHYSICS

Kiten, Bulgaria 1 – 12 September 2010

## **EDITORS**

Ivan Zhelyazkov Todor Mishonov Faculty of Physics, Bulgaria

**SPONSORING ORGANIZATIONS** Sveti Sedmochislenitsi-08 Foundation (Sts Cyril and Methodius and their five disciples Foundation-08) St Clement of Ohrid University at Sofia



Melville, New York, 2011 AIP I CONFERENCE PROCEEDINGS ■ 1356 Editors

Ivan Zhelyazkov Todor Mishonov Faculty of Physics St Clement of Ohrid University at Sofia 5 James Bourchier Blvd. BG-1164 Sofia, Bulgaria

E-mail: izh@phys.uni-sofia.bg mishonov@gmail.com

Authorization to photocopy items for internal or personal use, beyond the free copying permitted under the 1978 U.S. Copyright Law (see statement below), is granted by the American Institute of Physics for users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$30.00 per copy is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Services is: 978-0-7354-0914-9/11/\$30.00

© 2011 American Institute of Physics

No claim is made to original U.S. Government works.

Permission is granted to quote from the AIP Conference Proceedings with the customary acknowledgment of the source. Republication of an article or portions thereof (e.g., extensive excerpts, figures, tables, etc.) in original form or in translation, as well as other types of reuse (e.g., in course packs) require formal permission from AIP and may be subject to fees. As a courtesy, the author of the original proceedings article should be informed of any request for republication/reuse. Permission may be obtained online using Rightslink. Locate the article online at http://proceedings.aip.org, then simply click on the Rightslink icon/"Permission for Reuse" link found in the article abstract. You may also address requests to: AIP Office of Rights and Permissions, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502, USA; Fax: 516-576-2450; Tel.: 516-576-2268; E-mail: rights@aip.org.

L.C. Catalog Card No. 2011904399 ISBN 978-0-7354-0914-9<sup>1%</sup>Qtki kpcriRtkpv+ ISSN 0094-243X Printed in the United States of America

## AIP Conference Proceedings, Volume 1356 3rd School and Workshop on Space Plasma Physics

Table of Contents	
Preface	1
Acknowledgment	2
I. ASTROPHYSICAL PLASMA	
Non-exponential growth in density-stratified thin vertically isothermal discs M. Mond and Yu. M. Shtemler	5
Waves in accretion disks in close binary stars D. V. Bisikalo	17
Numerical simulations of accretion processes in T Tauri stars A. M. Fateeva	24
Spectral observations and Doppler mapping of the close binary system SS Cyg D. A. Kononov	32
Interpretation of the line spectrum of classical symbiotic stars in the scenario for their prototype Z	
And N. A. Tomov, D. V. Bisikalo, M. T. Tomova, and E. Y. Kil'pio	35
Probing the extinction in M31 via a spectrum of a quasar seen through its disk P. Nedialkov, B. Williams, J. Green, and D. Hatzidimitriou	45
Four-component modeling of brightness profiles of spiral galaxies and model total magnitudes Ts. B. Georgiev	50
Gravitational abberation of a cluster of galaxies: Dark matter V. Kalinova and G. Gyulchev	60
Weak and strong MHD turbulence G. Gogoberidze, S. Mahajan, S. Poedts, and M. Akhalkatsi	67
Models of imbalanced MHD turbulence G. Gogoberidze, S. Poedts, and M. Akhalkatsi	75
Nonlinear terms of MHD equations for homogeneous magnetized shear flow Z. D. Dimitrov, Y. G. Maneva, T. S. Hristov, and T. M. Mishonov	80

## II. SOLAR PLASMA

Detection of solar oscillations (g-modes) Y. Homayouni and A. Ajabshirizadeh	95
Null-point oscillations of chromospheric large cool jets E. Tavabi, S. Koutchmy, and A. Ajabshirizadeh	99
Solar spicules: Recent challenges in observations and theory T. V. Zaqarashvili	106
Wave propagation in solar spicules H. Ebadi, T. V. Zaqarashvili, and I. Zhelyazkov	117
Heating of the solar corona by Alfvén waves: Self-induced opacity N. I. Zahariev and T. M. Mishonov	123
Hall-magnetohydrodynamic waves and their stability in flowing solar-wind plasmas I. Zhelyazkov	138
III. MAGNETOSPHERIC AND INTERPLANETARY PLASMA	
Nonlinear mirror modes in space plasmas PL. Sulem	159
Fast solar wind and geomagnetic variability during the descendant phase of the 11-yr solar cycle G. Maris and O. Maris	177
Cycles of the solar wind flux at the front of the Earth's magnetosphere Y. Shopov and D. Stoykova	192
Auroral radio emission from the solar system planets M. Panchenko	204
Photos	217
List of Participants	225
Author Index	227