

Black Sea School on Plasma Physics Proceedings

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Faculty of Physics, University of Sofia

Preface

A school and workshop on waves and turbulence in space plasmas, organized by the Bulgarian URSI Committee (Commission H, Waves in Plasmas), was held in the Guest House of the University of Sofia at Kiten, Bulgaria, from July 1 to 9 2006. The number of participants was 36 from 10 countries, as follows: Australia (1), France (1), Germany (1), Italy (2), Japan (1), Romania (2), Russia (6), United Kingdom (4), USA (1), and Bulgaria (17).

The covered topics were: wave phenomena in the solar atmosphere (linear, nonlinear, shock waves, wave mechanisms of particle acceleration, stability of circularly polarized Alfvén waves) as well as the coronal mass ejection and associated solar energetic particle events (interplanetary turbulence and self-generated Alfvén wave turbulence near shock wave fronts) and also the ULF resonances in the Earth's magnetosphere due to the solar wind–magnetosphere interactions. Other interesting issues like magnetic reconnection in magnetized plasmas, the accretion disks and angular-momentum transport mechanisms (including jets), waves in accretion disks in binary stars, dynamics of astrophysical weakly-ionized plasmas and its applications to molecular clouds, star formation and protostellar/protoplanetary disks, and magneto-rotational supernovae and instability were explained in detail, too.

One of the most mysterious phenomena in plasma physics – turbulence – was discussed, more specifically the magnetohydrodynamical turbulence in the early Universe and its links with the primordial magnetic fields, the nonlinear effects in charged-particle transport in turbulent magnetic fields, and the applicability of the field theoretical methods in the theory of turbulence relaxation. Analysis techniques for characterizing nonlinearity in space plasmas (wavelet analysis versus fast Fourier transforms) also were exposed.

A peculiarity of the School and Workshop in Kiten was the circumstance that graduate and PhD students (Miss Yana Maneva, Miss Aglika Savtchenko, Miss Krassimira Iankova, and Mr. Vyacheslav Zhuravlev) had the opportunity to give their first talks in a scientific forum – their presentations are included in the present Proceedings.

At a meeting of the International Advisory Committee, it was concluded that the School and Workshop in Kiten was very successful and that forum should trigger summer schools in Bulgaria on similar items and with much larger student audiences. These Proceedings are the first ones of the Black Sea Schools on Plasma Physics; unfortunately they do not include all invited and contributed talks. Nevertheless, as a compensation, all talks (in their original form) are uploaded on the Black Sea School on Plasma Physics site.

I wish to express my deep gratitude to the International Advisory Committee members and the Local Organizing Committee members for contributing to the success of the School and Workshop in Kiten. My sincere thanks go as well to all the participants and especially to those who found time to prepare their talks as regular Proceedings' papers. The financial support by the Commission H at URSI, St. Cyril and St. Methodius Foundation, Bulgarian Academy of Sciences and the University of Sofia is also gratefully acknowledged.

Ivan Zhelyazkov
Proceedings Editor

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