INTERNATIONAL SPACE SCIENCE INSTITUTE
Hallerstrasse 6 • CH-3012 Bern • Switzerland

Second Circular
Workshop of the International Space Science Institute (ISSI)

Multi-scale physics in coronal heating and solar wind acceleration - from the Sun into the inner heliosphere

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Date: 25-29 January 2010

1. General Information

The International Space Science Institute (ISSI) is hosting a workshop on the subject of *Multi-scale physics in coronal heating and solar wind acceleration - from the Sun into the inner heliosphere*. The attendance at this workshop is by invitation only. All participants listed below have been contacted earlier and have given a positive reply.

The aim of this information circular is to provide the participants with some more detailed information on the workshop program, organization and logistics, and to inquire about hotel reservation information. A third circular will be distributed a few weeks before the workshop as a reminder and to give some last minute information. Please consult the letter of invitation and our WWW homepage at www.issibern.ch for general information about ISSI.

2. Objective

The heliosphere is filled with solar wind originating in the solar corona. The physical states of coronal plasma, and its multi-scale structure, are defined by physical processes in spatial regimes which range over many orders of magnitude from the scale of 1 AU to the kinetic scales of the plasma in the corona and the heliosphere. In many cases, the understanding of the kinetic processes is crucial for the understanding of macroscopic phenomena to address questions such as:

- What is the physical process that is responsible for the heating and acceleration of the solar wind from coronal holes?
- What is the relative role of the magnetic topology and reconnection in the release of slow wind and coronal mass ejections?
- What are the processes that dominate the thermodynamic evolution of the solar wind in the inner heliosphere?

This workshop will explore these cross-linkages, which are at the heart of our understanding of the heating of the closed and open corona, and the acceleration of the solar wind. The workshop will focus on novel data, and theoretical models that have observable consequences through remote sensing, and in near-solar and inner heliosphere observations, such as anticipated by the upcoming Solar Orbiter and Solar Probe missions to be developed by the international community.

3. Workshop Structure and Program

This one-week workshop will be structured into three sessions. Each session consists of a series of 13 30-min talks (incl. discussion). Speakers are requested to submit their presentation material to ISSI at the time of the Workshop where it will be made available to all participants on a server. Each session will be concluded by a long (90 min) plenary discussion, which will be prepared and moderated by two discussion leaders and summarized in a discussion paper in the Workshop volume.

The draft program is attached to this circular. Please note that individual talks may still need to be shifted somewhat.

4. Publication

A workshop volume is planned to be published by Springer both as a hardcover book in the *Space Sciences Series of ISSI* (SSSI) and as an issue of the journal *Space Science Reviews* (SSRv). Papers may be prepared in LaTeX or Word using the style of Space Science Reviews, and must be submitted to the Journal using the Editorial Manager system. The editors of the volume will be announced at the Workshop. Further details about the publication (including deadlines, style files and such) will be given at the workshop.

5. Funding of the workshop

ISSI will fund the participants by providing the daily subsistence cost during the time of the meeting up to a maximum of 7 days (time of arrival in Bern through departure from Bern). This includes the cost for the hotel and for meals. However, ISSI is not in a position to cover travel costs, taxis, phone calls etc.
There will be no registration fee charged for this workshop.
ISSI will also cover the publication costs of the book volume, of which each participant will receive a complimentary copy.

6. Equipment available at ISSI

ISSI is equipped with a pool of different kinds of workstations such as PCs, Macs, and Sun Stations, as well as with Postscript printers for both b/w and color. All machines have Ethernet connections and run web browsers, ssh, telnet, ftp, etc., so connecting home, accessing email, printing, etc. while at ISSI will be no problem.
Participants who bring their own notebook computers will be able to connect to the Ethernet through the standard RJ45 plug. Cables are available at ISSI and addresses will be dealt out by our DHCP server. We also provide wireless access; participants wishing to use that service will receive a username/password combination from our

computer engineer and system administrator, Saliba F. Saliba (saliba@issi.unibe.ch), who will also help with any other computer-related questions.
The meeting room is equipped with a computer and beamer for electronic presentations, a video player, an overhead projector, a slide projector, and a whiteboard.

7. Social Program

An informal welcome drink will be offered at the end of the first day at ISSI, on Monday, 25 January 2010 at 5:30 p.m.
A free afternoon is foreseen on Wednesday, 27 January 2010, for sightseeing in or around Bern. Suggestions will be made at the Workshop.
A workshop dinner will be offered to all participants in the evening of Wednesday, 27 January 2010, at 7:30 p.m., in a restaurant located in the old part of the city.

8. Travelling to Bern

Bern can be reached easily from two international airports: Zurich (ZRH) and Geneva (GVA). Direct intercity trains to Bern depart every half hour from inside the airport buildings; see www.rail.ch for detailed departure times. The travel time is ~1.5 hours from Zurich airport and ~2 hours from Geneva airport.
There is also a local airport (Bern, BRN), located a 20-minute shuttle ride from the city centre, with connections to several European cities (Paris, Munich, etc.). Bern is connected to many European cities by fast intercity trains (e.g. TGV Paris-Bern in 4.5 hours, or Frankfurt-Bern 5 hours). Timetable information of trains within and around Switzerland can be found at www.rail.ch. Also check out http://www.issibern.ch/localguide/location.html for a few more travel tips and links to city maps of Bern, weather forecasts, currency calculators, etc...

9. Hotel Reservations

All participants of the workshop are kindly requested to contact the workshop secretary, Brigitte Fasler (Tel. +41-31-631-4896, Fax: +41-31-631-4897, email: fasler(at)issibern.ch), to indicate their arrival and departure dates and times, as well as any special requests they may have (e.g. double room). A confirmation will be returned within a few days. Block bookings have been made in nearby hotels; please see www.issibern.ch/hotel_info.html for a map indicating the location of the hotels and of ISSI. Deadline for sending the hotel reservation information, which should include your complete contact information, is **17 December 2009.**

List of Participants

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Workshop Program

Monday 25 January 2010

10:00-10:15	Roger M. Bonnet	Welcome to ISSI
10:15-10:30	Convenors	Opening of the Workshop
Session I. What is the physical process that is responsible for the heating and acceleration of the solar wind from coronal holes?		
10:30-11:00	Ester Antonucci	UVCS observations of T and V profiles in coronal holes
11:00-11:30		*Coffee*
11:30-12:00	Eckart Marsch	Helios: evolution of distribution functions 0.3-1 AU
12:00-12:30	Liang Zhao	Is the fast SW composition different from solar?
12:30-14:00		*Lunch*
14:00-14:30	Rudolf von Steiger	Solar wind charge states and coronal temperatures
14:30-15:00	Klaus Wilhelm	SUMER observations of CH temperature
15:00-15:30	Scott McIntosh	Source observations of the fast SW in CH
15:30-16:00		*Tea*
16:00-16:30	Viggo Hansteen	Solar wind models from the chromosphere to 1 AU
16:30-17:00	Yi-Ming Wang	Slow and fast phenomenological/empirical solar wind models
17:00-17:30	Steve Cranmer	Self consistent solar wind models
17:30		*Welcome Drink*

Tuesday 26 January 2010

09:00-09:30	Francesco Malara	Role of waves in coronal heating and solar wind acceleration
09:30-10:00	Andrea Verdini	Fully self-consistent MHD turbulence models of the solar wind
10:00-10:30	William Matthaeus	The role of incompressible MHD turbulence in the solar wind
10:30-11:00		*Coffee*
11:00-12:30	Marco Velli & Rudolf von Steiger	Discussion Session I
12:30-14:00		*Lunch*
Session II. What is the relative role of the magnetic topology and reconnection in the release of slow wind and coronal mass		
14:00-14:30	Spiro Antiochos	Current sheets in the corona and the complexity of slow wind
14:30-15:00	Jon Linker	Interactions of closed field with open field in the corona: Importance of interchange reconnection
15:00-15:30	Kazunari Shibata	Fractal reconnection and particle acceleration in the corona
15:30-16:00		*Tea*
16:00-16:30	Säm Krucker	Observations of particle acceleration in partially occulted flares
16:30-17:00	Jack Gosling	Reconnection in the solar wind
17:00-17:30	Nancy Crooker	Interchange reconnection, signatures and importance for flux balance

Wednesday 27 January 2010

09:00-09:30	Mike Shay	Do kinetic reconnection models produce fast reconnection in large systems?
09:30-10:00	Thomas Zurbuchen	What are the sources of the slow wind?
10:00-10:30	Jim Drake	Particle acceleration and power law distributions during magnetic reconnection
10:30-11:00		*Coffee*
11:00-11:30	Glenn Mason	Power law distributions of suprathermal particles in the quiet solar wind
11:30-12:00	Simone Landi	3D simulations of magnetic reconnection with and without velocity shears
12:00-12:30	Bill Daughton	The transition from collisional to collisionless reconnection
12:30-13:00	Paul Cassak	The onset of fast reconnection in the corona
13:00-19:30		*Free afternoon*
19:30		*Workshop dinner*

Thursday 28 January 2010

09:00-10:30	Thomas Zurbuchen & Jim Drake	Discussion Session II
10:30-11:00		*Coffee*
Session III. What are the processes that dominate the thermodynamic evolution of the solar wind in the inner heliosphere?		
1) Kinetic processes in solar wind acceleration:		
11:00-11:30	Petr Hellinger	Coupling global expansion with local instabilities
11:30-12:00	Christian Vocks	Vlasov kinetic models of coronal expansion and solar wind acceleration
12:00-12:30	Viviane Pierrard	Solar wind electron transport - heat conduction and interplanetary electric field
12:30-14:00		*Lunch*
14:00-14:30	Filippo Pantellini	Heat flux transport
2) Turbulence from fluid to kinetic scales:		
14:30-15:00	Tim Horbury	Magnetohydrodynamic turbulence spectra in the solar wind - evolution and anisotropy -
15:00-15:30	Vincenzo Carbone	MHD turbulence - scaling, cascading and intermittency
15:30-16:00		*Tea*
16:00-16:30	Ben Chandran	The theory of anisotropic MHD turbulence
16:30-17:00	Alexander Schekochihin	Turbulent cascading in the framework of gyrokinetic theory
17:00-17:30	Jaime Araneda	Nonlinear Alfven/ion-cyclotron wave interactions with ions in the solar wind

Friday 29 January 2010

09:00-09:30	Lorenzo Matteini	Effects of plasma wave instabilities on solar wind particle evolution
3) Role of plasma instabilities in thermodynamic evolution:		
09:30-10:00	Peter Gary	Theories and simulations of temperature-anisotropy and beam instabilities
10:00-10:30	Justin Kasper	Particle observations and solar wind thermodynamics
10:30-11:00	Stuart Bale	Solar wind plasma waves - excitation, propagation and absorption
11:00-11:30		*Coffee*
11:30-13:00	David Burgess & Eckart Marsch	Discussion Session III
13:00-13:30	Convenors	Closing of the Workshop, Publication plans
13:30		*Adjourn*