

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

8 February 2014

The Strongest Magnetic Fields in the Universe

Date: 3 - 7 February 2014

Conveners

André Balogh	(Imperial College, London)
Vasily Beskin	(Lebedev Physical Institute, Moscow)
Maurizio Falanga	(ISSI Bern)
Maxim Lyutikov	(Rutgers University, USA)
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Tsvi Piran	(Hebrew University, Jerusalem)
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Objectives of the Workshop:

The present Workshop, which is the last in a series of Workshops organized at the International Space Science Institute on Cosmic Magnetic Fields, intends to deal with the compact magnetized objects encountered in the Universe, understanding how the observed very strong magnetic fields that are sometimes found in the environment of these objects are generated and what effects they produce on their environment as well as the generation of the radiation emitted from them which is the only carrier of the remote information. Among these effects the generation of Jets and their complex physics, the occurrence of Gamma Ray Bursts, the formation and properties of Relativistic Shocks, and the production of High-Energy Particles by the Cosmic Engines are of tantalizing interest.

The Workshop will review observations and theory of the magnetic field production at the observed strengths as well as their effects on the objects and the environment.

The Workshop will cover the following main themes:

The Workshop is designed to review in depth what has been achieved in the research on strong magnetic field in the universe. The main goal of the proposed ISSI Workshop is to discuss the state of the art of the research and future prospective.

Following discussions by the Conveners, it is proposed that the Workshop will cover the following main themes:

1. Magnetic Stars
2. White Dwarfs
3. Neutron Stars
4. Magnetars
5. Pulsar Wind Nebulae
6. AGNs/GRBs
7. Jet Acceleration/Collimation
8. Reconnection/Particle Acceleration

Short presentations by those attending will be structured around the above headings. This list could, subject to discussion and assessment at the Workshop, become the set of chapter headings for the ISSI book. All of those attending will be expected to contribute to one or more of the chapters or for the discussions during the talks.

Product

Following the Workshop, its output will be published as a volume in the Space Science Series of ISSI by Springer, in parallel with the publication of the papers in Space Science Reviews. It is expected that a total of about 9 sections and between 20 and 25 review style and quality papers, submitted to the usual refereeing process will be published in the book. Papers will be based on talks presented at the Workshop and will reflect the discussions that will be held among the participants during the Workshop. A realistic schedule for the publication of the contributions will be discussed and agreed at the end of the Workshop.

Advice to Speakers

The conveners would like to remind the speakers that ISSI workshops differ in many ways from other, larger gatherings called "workshop". The guiding spirit of the ISSI workshops is interaction between the attendees who are representing, in this case, all aspects of the Strongest Magnetic Fields in the Universe. The resulting multi-author chapters should provide a broad view of the current status of this important discipline but, the Workshop should focus on the future directions of the subject – what we are seeking to achieve in the future and what we need to do to get there. This latter aspect includes new missions, new instrumentation and observing methodologies, new analysis techniques and the development of theory. With this in mind, presenters are encouraged to spend a fraction of their talks in addressing future directions and challenges and the barriers that need to be overcome. We anticipate that the extended discussion sessions will seek to emphasise also these aspects.

Location

The Workshop will be held at the International Space Science Institute, Hallerstrasse 6, 3012 Bern, Switzerland.

Attendance

This will be by invitation only. The draft version of the Workshop programme is attached to this 2nd circular.

Young scientists

Under its special programme for supporting young scientists, ISSI will invite four to five early career scientists, within two years of their PhD, to take a full part in the Workshop. ISSI will cover the subsistence costs (hotel and meals) to the invited young scientists (see participants list).

Funding

ISSI will provide the subsistence costs (hotel and a per diem to cover meals) to all participants but not the travel costs. There will be no registration fee for the Workshop.

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 <http://www.flughafenbern.ch/>), located a 20 minute shuttle ride from the city centre, with direct connections to Munich, Berlin Schönefeld, Hamburg, Amsterdam, London City, Vienna and Paris Orly.

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 our website www.issibern.ch/ for a few more travel tips such as links to city maps of Bern, weather forecasts, tourist information etc...

Hotel reservations

A block booking has been made in city centre hotels for the Workshop. All participants at the workshop have already been requested to contact the workshop secretary, Jennifer Zaugg (Tel. +41-31-631-4896, Fax: +41-31-631-4897, email: Jennifer.Zaugg@issibern.ch), to indicate their arrival and departure dates and times, as well as any special requests they may have (e.g. double room). Please note that all hotel reservations have to be made by the ISSI Secretariat.

A confirmation will be returned within a few days. Block bookings have been made in nearby hotels; please see <http://www.issibern.ch/localguide/location.html> for maps that indicate the location of ISSI and of the hotels (go to “hotels”, and near the bottom of the page “map of hotels”).