Dear Colleagues Please consider submitting an abstract to one of the sessions listed below that are organized during the upcoming EGU meeting in Vienna, 17-22 April 2016. The deadline for abstract submission is Jan, 13th 2016 at 13:00 CET. Thank you and best regards Alessandro Retino

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Session ST1.5
Particle acceleration mechanisms in solar system plasmas: observations and theory

Convener: Alessandro Retinò
Co-Conveners: Harald Kucharek , Hamish Reid , Adam Masters , Drew Turner

This session is intended as a discussion forum to review and improve our current understanding of particle acceleration mechanisms in solar system plasmas from both experimental and theoretical point of view. In particular, this session should contribute to highlight the current and future synergies between in situ and remote observations, simulations, and theories. Synergism is crucial to establish how fundamental acceleration mechanisms operate in different solar system plasma environments (e.g. solar corona/wind, planetary magnetospheres). Such collaborative approach is strongly motivated by major observational advances obtained with new generation of spacecraft like Cluster, Themis, MMS, RBSP, Rhessi, Stereo, Hinode, SDO, etc, as well as observations that will be provided by upcoming missions such as Solar Orbiter and Solar Probe Plus that will allow the first simultaneous in situ and remote observations in the solar corona/wind. We solicit contributions on the topic of particle acceleration mechanisms such as those operating in magnetic reconnection regions during solar flares and planetary substorms, in solar wind stream interfaces e.g. co-rotating interaction regions, at interplanetary and planetary shocks/foreshocks and in radiation belts and auroral regions.

http://meetingorganizer.copernicus.org/EGU2016/session/20705

Session ST1.6
Energy dissipation and particle energization in solar wind, bow shock and magnetosheath

Convener: Andris Vaivads
Co-Conveners: Alessandro Retinò, Yuri Khotyaintsev , Jan Soucek, Francesco Valentini, C.-Philippe Escoubet

The Universe is permeated by hot, turbulent magnetized plasmas. They are found in active galactic nuclei, supernova remnants, the intergalactic and interstellar medium, the solar corona, the solar wind, and the Earth’s magnetosphere, just to mention a few. Understanding basic plasma processes of plasma heating and energization in turbulent magnetized plasmas is of fundamental importance if we are ever to understand the

evolution of the Universe. However, we still do not understand many of the underlying physical mechanisms of energy dissipation through plasma heating and particle acceleration. In this session we focus on kinetic scale plasma processes that are responsible for plasma heating and particle acceleration. Of particular interest are turbulent plasmas and shocks, which are known to be efficient regions of energy dissipation. Contributions are welcome addressing such fundamental questions as how is plasma heated and particles accelerated, how is the dissipated energy partitioned, how does dissipation operate in different regimes of turbulence and shocks. We encourage contributions using observations from near Earth space satellites (e.g. Cluster, THEMIS, MMS) as well as planetary satellites (e.g. Cassini, Maven) and solar wind satellites (e.g., Wind, STEREO, Dscvr). Theoretical and numerical simulation studies, as well as studies addressing astrophysical importance of the questions are also welcome. This session is highly relevant for the THOR mission (thor.irfu.se) currently undergoing a study phase by ESA. During the session will be also presented the ESA study of THOR and the current status of the THOR payload.

http://meetingorganizer.copernicus.org/EGU2016/session/20706

Session NP6.3
Turbulence and magnetic reconnection: current results and future experiments

Convener: Giovanni Lapenta
Co-Conveners: Alex Lazarian, Alessandro Retinò, Francesco Valentini,

Magnetized plasmas are frequently turbulent in astrophysical systems, as well as in space and laboratory. The turbulence is known to change many properties of fluids, in particular their transport properties. Does it change the properties of magnetic reconnection? What is the back reaction of magnetic reconnection on turbulence in magnetized plasmas? These two interrelated questions are the focus of the proposed session. We aim at creating a forum of experts to summarize the recent significant advances in both the field of turbulence and magnetic reconnection and provide the forum for discussing new directions.

In many situations, e.g. in the Solar wind case, the properties of turbulence are affected by the properties of the energy injection scale. Therefore it is essential to search for the signatures of how the properties of turbulence and the measured properties of magnetic reconnection are related.The novelity of the proposed session is twofold. First of all, reconnection is usually assumed to be slow, unless special conditions are satisfied, e.g. magnetized plasma is collisionless. Is it always true? While a lot of the research in the area of reconnection deals with collisionless processes, many important questions are left unaswered. Is Sweet-Parker reconnection stable for large Lundquist numbers? Do we expect collisional gas, which constitutes most of the Sun's interior, Sun's photosphere, interstellar media etc. to exhibit slow reconnection? The latter would mean that the entire crop of simulations of magnetized collisional media are in error. Second, the

discussion of magnetic turbulence is usually is disconnected from the fundamental property of magnetic field to reconnect. At the same time, one should realize that the phenomenon of slow reconnection, if it takes place in turbulent systems, must substantially modify the properties of turbulence and may potentially make the simulations with the present diffusive codes not representative of the turbulence in actual astrophysical environments of high conductivity.

Magnetic reconnection is a universal energy dissipation mechanism occurring in magnetized plasmas. Such plasmas are frequently in a turbulent state, raising the fundamental question of how reconnection and turbulence are related to each other. In addition, many key processes, e.g. particle acceleration, may be driven both by magnetic reconnection and magnetic turbulence, but it is difficult to find reliable ways to distinguish the causes and the effects in the context of vortical and helical forcings.

http://meetingorganizer.copernicus.org/EGU2016/session/20347