

At the MOP 2011 meeting at Boston University, we propose to have two workshop sessions. The sign-up process for each workshop will be arranged after the abstracts are in and a preliminary scientific program developed (1st week of June)

(1) a plenary workshop to discuss the observations and models related to the periodicity of Saturn's Magnetosphere (tentatively 2 hours on Wed. afternoon); Organized by Philippe Zarka and Patricia Schippers

(2) multiple separate workshops held at the same time (different rooms) to discuss various specific modeling studies (tentatively 2 hours on Monday). Coordinated by Fran Bagenal, workshop chairs TBD.

1 - Workshop on Periodicity of Saturn's Magnetosphere

Motivation: The rotation of Saturn has become a central question of the Cassini community, especially for, but not only, magnetospheric science. The radio rotation period derived from SKR (Saturn Kilometric Radiation) measurements was thought for more than 25 years (a) to be known and (b) to be a measure of the internal rotation of Saturn. Then, in a few years, (i) the radio rotation was found to be slowly variable at timescales of months to years (first by Ulysses, then confirmed by Cassini), consistent with a seasonal effect, (ii) this variable rotation was found to apply - with a variable degree of certainty - to many other magnetospheric parameters (density, energetic particles, magnetic field, disc currents, magnetopause, UV aurora...), (iii) a superimposed short-term (weeks) jitter was discovered and related to the solar wind fluctuations, (iv) different periods were found in the two hemispheres, which vary in near anti-correlation, merged, then crossed each other a few months after equinox. In parallel, several models have been proposed for explaining at least some of the observational results: equatorial convection cells, magnetic cam, inter-hemispheric current system, etc.

It is expected that the MOP 2011 plenary session will be an occasion to have up-to-date presentations on all of these topics, following a tutorial by L. Lamy and possibly complemented by posters. The proposed "Saturn periodicity workshop" will be held AFTER these presentations, and will aim at: (1) list and debate all observational constraints, (2) list all proposed explanations and models, (3) examine critically each model's pros and cons (merits and drawbacks, strengths and shortcomings) in the light of the observational constraints, (4) debate compatibilities and incompatibilities between the models and define observations that will allow us to discriminate between them.

The workshop will be coordinated by Philippe Zarka and Patricia Schippers, whose role will be (i) to introduce the discussions based on notes take during the plenary (and poster) session, (ii) to chair/organize the debates, give/limit presentation/intervention time to all volunteers, and (iii) prepare brief conclusions of this workshops. The format of

the workshop will consist of brief interventions by all volunteering participants, following the order (1-4) proposed above, with or without slides, with ample time for questions and debates, and if possible planned in advance by contacting the workshop organizers - followed by a general discussion.

2. Modeling Workshops session

Goal: Provide an opportunity for people who are interested in the modeling of components of the magnetospheres of the outer solar system to roll up their sleeves to discuss different approaches to modeling, compare different models, and - perhaps most importantly - compare models with data.

Topics:

- Global dynamics
- Titan interaction
- Io interaction
- Enceladus interaction
- J&S Atmos.-Ionos.-Magnetos. interaction

Participants: Each workshop to include anyone who wishes to present their model(s) and/or data on the specific topic – plus any other MOP participants who is interested.

Process: Mini-workshops on each topic, in parallel, lasting ~2 hours. Each workshop has a Co-ordinator who is a non-advocate chair - that is, someone who is not too closely attached to any particular model but experienced/interested in the topic. MOP participants interested in attending one of the workshops signs up for the workshop (no need for abstracts). Well before the meeting the coordinators will send out to signed-up participants a list of workshop goals plus some specific requests to modelers. For example: that all modelers describe their model, boundary conditions, input parameters, output parameters, comparison with specific data (e.g. observations of a specific flyby, or plasma conditions in the plasmashet, response to specific IMF, etc). Workshop format is up to the coordinators, but we envisage short (<10 mins?) presentations and lots of discussion.

Reports to Plenary:The next day the coordinators of the workshops present to the whole MOP plenary the outcomes of the workshops.

Size: Five workshops with 25 people = 125 people total - probably around MOP attendance. We might want to restrict each workshop size to 25 to enhance discussion. Ideally, we need separate rooms with presentation equipment. But we may be able to manage with just laptops for a workshop of <12 people.