

COMMISSION 7

CELESTIAL MECHANICS AND DYNAMICAL ASTRONOMY

MÉCANIQUE CÉLESTE ET
ASTRONOMIE DYNAMIQUE

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Toshio Fukushima,
Douglas C. Heggie, Anne Lemaitre,
Andrzej J. Maciejewski,
Alessandro Morbidelli,
Milos Sidlichovsky,
David Vokrouhlický, Ji-Lin Zhou

PROCEEDINGS BUSINESS MEETING on 22 August 2006

1. Opening of the business meeting of Commission 7

1.1. *Address by the outgoing president of the Commission, A. Milani*

In his address to the Commission, the outgoing president A. Milani explained what he considers have been done well in the past triennium, what has been done only in part, and what has not been done at all. Among the things in which the performance was rated good, he mentioned the successful sponsorship and/or co-sponsorship of four meetings (IAU Colloquia 196 and 197, and Symposia 229 and 236) which have been held in the previous period, as well as of the Symposium on exoplanets to be held next year in China. The only failure in this respect was the proposed meeting in India, which failed already at the proposal definition stage. Also, Milani expressed his satisfaction with the triennial report which has been compiled for the occasion, and his gratitude to the collaborating authors.

What was done only in part has to do with the problem of maintenance and regular update of the mailing list of Commission 7 members, and the communication of the OC with the membership. Because of a large number of inaccurate e-mail addresses of individual members, the communication with the members has been mostly commission web-page oriented, which proved to be insufficient and should be improved in the future.

The one thing which was not done at all is the Terms of Reference document, requested by the IAU executives to justify the existence of the commission and the need for it to continue as such in the future.

1.2. *Address by the incoming president of the Commission, J. Burns*

In his brief address, the incoming president J. Burns said that he is aware of the duties and responsibilities of the position he is taking over, and on behalf of the commission congratulated and thanked A. Milani for the excellent job and results he had achieved as president of the Commission.

2. Membership of Commission 7

There were 35 candidates who expressed their interest in becoming members of Commission 7. After a thorough review of the applications, 31 candidate has been proposed for the membership, while for four of them not enough information had been available to accept them to the membership at this time. The proposal was unanimously accepted.

Commission deeply regrets five of its members who passed away in the previous period.

3. Report on the scientific achievements in 2002–2005

The Report on the scientific achievements in Celestial Mechanics and Dynamical Astronomy in the period 2002–2005 has been prepared in due time and is available from the Commission 7 web page.

4. Report on the Commission activities in the period 2003–2006

4.1. *Past IAU meetings sponsored by the Commission*

Short reports on the Colloquia and Symposia sponsored by the Commission has been given by A. Lemaitre (Coll. 196), Z. Knežević (IAU Coll. No. 197), and by A. Milani (IAU Symposia No. 229 and No. 236). The reports have been acknowledged and accepted.

4.2. *Future IAU meetings sponsored by the Commission*

Detailed information on the future IAU Symposium No. 249 on exoplanets in China, October 2007, has been given by A. Milani and acknowledged by the present commission members.

5. Report on the CMDA journal

The report on the Celestial Mechanics and Dynamical Astronomy journal has been presented by the associated editor B. Erdi, on behalf of the absent Editor-in-Chief, S. Ferraz-Mello. The situation is not fully satisfactory, due to the merger of the previous and current publisher, but it is improving and is expected to be normalized soon enough. The impact factor of the journal is steadily increasing, and only because of the typically somewhat slower response of the readers and of the method of IF computation, the journal is yet to reach IF larger than 1. The report has been unanimously accepted, and is enclosed below.

6. Results of the elections for the new Commission 7 officials

A. Milani has given the details of the procedure of election of new officials of the Commission, and of the new members of the Organizing Committee. The President of the Commission in the period 2006–2009 is J. Burns, and Z. Knežević has been elected vice-president. The new members of the OC are R. Malhotra, S. Peale, and L. Athanassoula.

7. Appointment of the new secretary of the Commission

The secretary will be appointed by the president of the Commission later†.

8. Discussion

8.1. *IAU organization and the role of Commission 7*

WGNEO

The IAU EC has decided to form a new consultative committee to advise the EC on issues connected to the NEO impact risk. This replaces the previous WGNEO, which had expanded to the point that it had become as large as a Commission, with significant intersections of

† The secretary has been nominated: David Vokrouhlický.

competences with Commission 20, Commission 15 and to some extent Commission 7. The former members of the WGNEO are invited to join the relevant permanent Commission, if they do not belong to it yet.

Interdivision activities

The issue of possible change in the collocation of Commission 7 in the IAU structure was raised. A possible option would be to become part of both Division I and Division III: this is allowed by the current rules but has not been experimented yet. After some discussion, the Commission has asked the incoming president to inquire with the Divisions and to consult the Commission membership for a possible proposal in this sense to be discussed at the IAU XXVII GA in 2009.

8.2. *Topics on IAU agenda relevant for Commission 7*

Discovery rules and the MPC

The proponents of a new set of discovery definitions and discovery credit rules (for Solar System objects), including the outgoing President and Secretary of Commission 7, have briefly presented the Celestial Mechanics background of their proposal. It has already been agreed that Division III will be in charge of deciding on a new set of rules, and that this discussion will begin very soon under the supervision of Commission 20. These new rules shall be applied by the MPC, according to the new understanding between IAU and CfA for the operation of the MPC.

Definition of planet

The discussion on the new definition of planet taking place in this GA has been evaluated by the Commission 7 from the point of view of method and contents, especially for the Celestial Mechanics aspects. The current state of the discussion has not been found satisfactory and the Commission 7, which was certainly competent from the scientific point of view, has neither been involved in the preparation nor consulted nor informed at all before the public presentation of a new definition. Thus the Commission has discussed and unanimously approved the following Commission Resolution, to be presented to the Executive and to all the opportunities for discussion inside this GA.

The Commission 7 (Celestial Mechanics and Dynamical Astronomy) of the IAU, at its business meeting at the IAU XXVI General Assembly in Prague, 22 August 2006

CONSIDERING

that the IAU Executive Committee has presented a proposal of resolution on the naming of Solar System bodies, in particular deeply revising the usage of the word “planet”;

that the traditional terminology (planet, satellite, minor planet, etc.) is deeply rooted in the history of astronomy as a science and has always had a solid foundation in the basic principles of Dynamical Astronomy;

that Commission 7 has not been consulted in any formal way before making public the EC proposal;

FINDING

that the proposed definitions do not contain any appropriate dynamical argument, in particular lacking whatever consideration of planetary mutual perturbations, dynamical stability and chaos (the historically most important contribution of Astronomy to modern science);

that the proposed definitions do not contain any appropriate cosmogonical argument, in particular the consideration of the sweeping by a planet of its feeding zone;

that the proposed definitions contradict the history of Solar System astronomy, in particular reversing the recognition due to Olbers and Herschel (1804) that Ceres is not to be considered a planet because of the discovery of Pallas with a potentially crossing orbit;

that the proposed definitions contain other inappropriate dynamical arguments, such as unnecessary reference to orbital eccentricity and an unjustified emphasis on the position of the center of mass;

that a thorough consultation including the Dynamical Astronomy community is required,

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to revise the proposed definition according to the previous findings.

A proposal by M. Bailey of an alternative definition of planet, which would include dynamical arguments but also use the geophysical arguments on the internal structure of the body, was presented and received support from the Commission, with the understanding that the final version would have to be further adjusted to take into account the other points of view.

9. Miscellaneous

There were no additional items proposed for discussion at the business meeting.

Andrea Milani, *president*
Zoran Knežević, *secretary*

Appendix A. Celestial Mechanics and Dynamical Astronomy report 2002-2005

The main fact to report concerns the journal impact factor, published in the Journal of Citation Reports, which has continuously increased during the past 4 years and reached 0.856 in 2005. This factor measures the citations, in a given year, of papers published by the journal in the two previous calendar years. In fact, the citations to CMDA papers peak only in the third year after the publication year, and this profile is not considered in the rule adopted by the Institute for Scientific Information. If we proceed exactly as they do, but considering the papers published by the journal in the three or four previous years, instead of just two, we obtain a factor $\simeq 1.0$, which more properly measures the impact of the journal (see <http://www.astro.iag.usp.br/sylvio/celmech.html>). Since 2004 the journal is also included by JCR in the category Mathematics: Interdisciplinary Applications (in addition to Astronomy and Astrophysics) and ranked there in the 36th position on a set of 76 journals.

Another important fact in the period was the merging of Kluwer and Springer to form a new company. The merging affected the production routines, and successive problems and errors were recorded in the period 2004-2005. These difficulties are almost over and the journal is being published at a pace not far from the nominal schedules. The efforts to increase the diffusion of the journal, initiated by Kluwer, were continued and CMDA reaches now, through electronic and hardcopy subscriptions, some 4,000 institutions. The old issues are now available for free download through the NASA-ADS site. The better diffusion is in direct correspondence with the increase in the impact factor, the growth of one of them directly influencing the growth of the other.

At last, we mention that the on line manuscript submission, review and tracking system is now fully operational allowing much shorter times between the submission of one paper and the final decision concerning it. In the great majority of the cases the decision is taken within some months. These times could be yet shorter if all Associate Editors were collaborating to avoid unreasonable delays to appoint reviewers and decide on received reports. Some extremely long times are still recorded, but they generally correspond to papers demanding time consuming thorough revisions.

Sylvio Ferraz-Mello, *editor-in-chief*