

DIVISION IX

OPTICAL AND INFRARED TECHNIQUES

Division IX provides a forum for astronomers engaged in the innovation, development, and calibration of optical instrumentation and observational procedures including data processing.

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BOARD

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M. Dennefeldt	Vice President Commission 9
B. Nordstrom	Vice President Commission 30
I.S. McLean	Past President Commission 9
J.B. Hearnshaw	Past President Commission 30

PARTICIPATING COMMISSIONS

COMMISSION 9: INSTRUMENTATION AND TECHNIQUES
COMMISSION 25: STELLAR PHOTOMETRY AND POLARIMETRY
COMMISSION 30: RADIAL VELOCITIES

DIVISION IX: OPTICAL AND INFRARED TECHNIQUES *(TECHNIQUES OPTIQUES ET INFRAROUGES)*

PRESIDENT: Christiaan Sterken

BOARD: J. Hearnshaw, J. Landstreet, G. Lelièvre, I. McLean, C. Scarfe

Commission 9: Instruments

Commission 25: Stellar Photometry and Polarimetry

Commission 30: Radial Velocities

1. Introduction

Division IX provides a forum for astronomers engaged in the innovation, development, and calibration of optical instrumentation and observational procedures, including data processing. The total membership of the Division amounts to approximately 600 members.

2. Business meeting at Manchester

Present: Ian McLean, Arlo Landolt, Chris Sterken, John Hearnshaw, Ding-Qiang Su, Munetaka Ueno, Colin Scarfe

A discussion of the activities of the Division took place with a review of the principal theme of the last two years, viz. the question how to adapt the structure of the Division to the growing needs of colleagues working with large-scale facilities and new-technology auxiliary equipment and the fast progress in the field of detectors.

The Division has initiated a discussion towards creating additional Working Groups or Commissions that will deal with topics such as Telescope Technology, Adaptive Optics, Interferometry, Detectors, Data Reduction, Data Archiving, Calibration and Observatory Site Management. It appears that some clear views are emerging for the domains of interferometry and the global management of small telescopes. The most straightforward procedure is to move the existing Working Group on Interferometry from Commission 9 and make it a WG to the Division. The actual committee of the WG will accept a few new members who have shown interest in the matter (e.g. H. McAlister, D. Mourard, J. Davis). A WG on global coordination of small-scale observational facilities is an obvious response to the needs in this field.

3. Board of Division IX

During the last three years we experienced some drawbacks from the fact that the Board of the Division was rather small. We thus opted for inclusion of the Vice-Presidents of the Commissions. The Board of the Division for the next 3 years will thus be:

Arlo U. Landolt (Pres. Division IX, VP Comm. 25) Su Ding-Qiang (Pres. Comm. 9), Chris Sterken (Pres. Comm. 25), Andrei Tokovinin (Pres. Comm. 30), Michel Dennefeldt (VP Comm. 9), Birgitta Nordström (VP Comm. 30), Ian S. McLean (Past Pres. Comm. 9), John B. Hearnshaw (Past Pres. Comm. 30).

C. Sterken
President of the Division

COMMISSION 9: INSTRUMENTATION AND TECHNIQUES (*INSTRUMENTATION ET TECHNIQUES*)

PRESIDENT: Ian S. McLean

VICE-PRESIDENT: Ding-Qiang Su

ORGANIZING COMMITTEE: T. Armstrong, N. Brosch, M. Cullum, M. Dennefeld, G. Jacoby, C. Jordan, G. Lelièvre, S. Nishimura, A.K. Saxena, W. Tango, M. Tsvetkov

1. Introduction

During the General Assembly, Commission 9 had two business meetings, one held on August 9, 2000 and the second on August 10, 2000. The first meeting was held primarily for the purpose of electing new office bearers and for a report from the outgoing President of the Commission giving some of the highlights of the last triennium (as described in Reports on Astronomy, 1999). The second meeting was convened to hear updated reports and plans from the Commission's Working Groups. Commission 9 supported three Working Groups during the triennium: Sky Surveys, Detectors, and Interferometry. The Commission President and President-elect also met with the Division leader and other Commission Presidents to discuss the structure and development of the Commissions within Division IX.

At present, Commission 9 has just over 300 members. Although our Commission has been quite active in the past three years, and the efforts of the Working Groups have been productive, many astronomers with a leaning towards instrumentation are not members of the Commission. The officers of the Commission implore all who are interested in the development of new techniques and new astronomical instrumentation to become affiliated with Commission 9.

2. Elections of New Officers

Outgoing President McLean proposed Vice-President Ding-Qiang Su (China) as the new president of Commission 9. This proposal was seconded and the vote in favor of his appointment was unanimous. Prof. Su accepted the position.

McLean also proposed Michel Dennefeld (France), a current member of the SOC, as the new Vice-President. This proposal was seconded and also received unanimous approval by the membership. Dr. Dennefeld also agreed to serve.

Several members of the Scientific Organizing Committee retired from service to Commission 9. We thank Drs. Lelièvre, Tango, Nishimura and Jordan for their support. Members of the SOC staying on, in addition to President-elect Su and Vice-President-elect Dennefeld, are outgoing President McLean, and Drs. Cullum, Jacoby, Tsvetkov and Saxena. Several new members of the SOC were proposed and accepted. The new members are, Dr. John O'Byrne (Australia), Dr. Masonori Iye (Japan), Dr. X. Ciu (China) and Dr. Redfern (Ireland).

Commission 9 proposed to the General Secretary than all three Working Groups be continued into the next triennium. At the Division IX meeting however, it was agreed that the Working Group on Interferometry should be moved out of Commission 9 and under the Division directly. Each Working Group elected a new Chairperson. Sky Surveys will now be chaired by Dr. Russell Cannon of the Anglo-Australian Observatory with continued support

from Dr. Brosch, Detectors will be chaired by Dr. Tim Abbott (Nordic Optical Telescope), with continued support from Drs. Cullum and McLean, and the new Interferometry group under the Division will be chaired by Dr. Peter Lawson (JPL) with continued support from Dr. Tom Armstrong. On behalf of the Commission, I thank all of these people for their time and energy.

3. Working Groups

Dr. Russell Cannon provided the attendees at the Commission meeting with an update on the work of the Sky Surveys group. A detailed report is given in the IAU Transactions Vol. XXIVA. Dr. Martin Cullum discussed recent events in the area of large CCD detectors.

The need for continuity in these Working Groups was discussed and supported. It was also agreed that interferometry requires greater visibility (no pun intended) within the IAU. To this end, Commission 9 supported the proposal to place the Interferometry Working Group under the Division itself.

It remains for me to thank all the members of the SOC, as well as Division IX President Chris Sterken, for all their support over the last three years and for a very productive meeting in Manchester. It is a pleasure to hand over the work of the Commission to Professor Su.

Ian S. McLean
President of the Commission

COMMISSION 25: STELLAR PHOTOMETRY AND POLARIMETRY

(*PHOTOMETRIE ET POLARIMETRIE STELLAIRE*)

PRESIDENT: Christiaan Sterken

VICE-PRESIDENT: Arlo U. Landolt

ORGANIZING COMMITTEE: M. Bessell, M. Breger, I. Glass, J. Graham, H. Hensberge, D. Kurtz, J. Landstreet, E.F. Milone, T. Moffett, K. Sekiguchi, J. Tinbergen, W.H. Warren

1. Business meeting at Manchester

A discussion of the activities of the Commission took place with a review of the present state of the Commission. The work of Commission 25 covers the measurement of magnitude, colour and polarisation of astronomical objects. As such, the area of interest covers virtually every field of astrophysical research in the visual and infrared spectral domain.

Present: Saul Adelman, Luis Balona, Michel Breger, Noel Cramer, Luboš Kohoutek, Arlo Landolt, Gene Milone, Dave Philip, Ian Shelton, Chris Sterken

2. Commission membership

The membership of the Commission amounts to about 210. An inspection of that list reveals that the age distribution of the Commission members is rather top heavy, and that this aspect also translates itself in the composition of the Organising Committee. This has been a worry over the last couple of years, and the situation should be cured.

There should be no misunderstanding: an aging population should not be confused with an inactive Commission! This is obvious from Figure 1 which gives the distribution of Commission 25 members as a function of the date of their first and last published paper (closing date June 1, 2000) as recorded in the *Astrophysics Data System* (ADS). The zero-point on the horizontal axis has been put to 1950 in order to avoid distortions by veteran members like Alan Cousins. The vertical lines are proportional to the production gradient — that is, the total of papers as given by ADS divided by the number of years of activity.¹

The database search leads to the following conclusions:

1. the majority of members are very active and have published very recently
2. all members of the Organising Committee have high production gradients *and* belong to the upper line
3. there is a shortage of young members, especially in the Organising Committee

The conclusion is thus that the membership should be rejuvenated through an active recruitment, and that the same should be done in the Organising Committee.

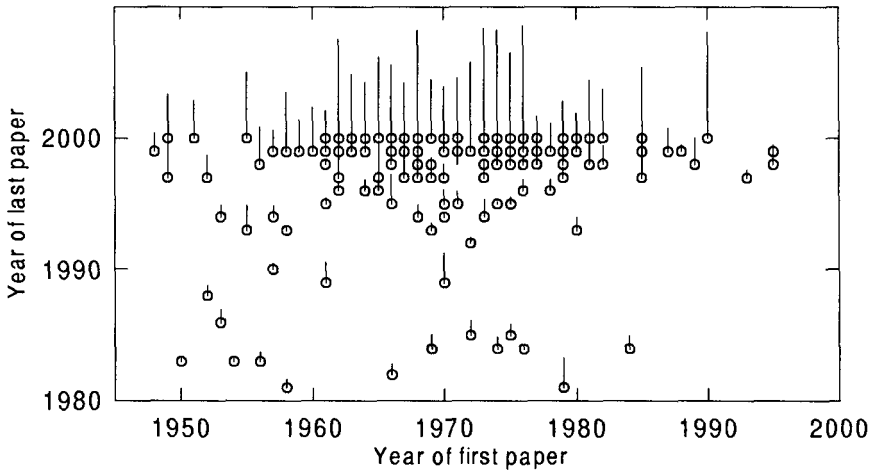


Figure 1. Distribution of Commission 25 members as a function of the date of their first and last paper recorded in ADS. The vertical lines are proportional to the production gradient.

3. The new Organising Committee

3.1. President and Vice-President

Since the cumulation of Division and Commission Presidencies in Division IX (which is undergoing a restructuring) deteriorates the working efficiency in both bodies, it was decided that Arlo Landolt will not combine both functions during the next triennium. The outgoing President and Vice-President were then reelected to serve another three years.

3.2. The Organising Committee

A call for nominations by email was organised before the meeting, and the following new members were voted in the meeting: P. Bastien, Wen Ping Chen, S. Fabrika, R. Gilliland, P. Martinez, P. Stetson, V. Straizys, and A. Walker.

The following Organising Committee members are leaving: M. Breger, D. Kurtz, J. Landstreet, T. Moffett and J. Tinbergen.

In 2003 the remaining members of the OC will retire (with the exception of Arlo Landolt): S.J. Adelman, M. Bessel, I.S. Glass, J.A. Graham, H. Hensberge, E.F. Milone, K. Sekiguchi, C. Sterken and W.H. Warren.

The actual number of SOC members thus amounts to 18, this will be automatically reduced to 9 in 2003, when we hope to add a handful younger people and a number of polarimetrists.

¹This graph should not be used as a bibliometric reference, it only reflects some objective bibliographic parameters that are readily available to the astronomical community

4. Scientific matters

Two important points were discussed and are action items for the next three years:

- At the Sydney General Assembly we insist to organise at least one science session, or Joint Discussion, possibly even a full meeting on photometry/polarimetry
- The definition of a coherent task area for Commission 25 with relation to technical aspects of groundbased- and space photometry and polarimetry (in the visual and infrared).

Christiaan Sterken
President of the Commission

COMMISSION 30: RADIAL VELOCITIES (VITESSES RADIALES)

PRESIDENT: John B. Hearnshaw

VICE-PRESIDENT: Andrej A. Tokovinin

ORGANIZING COMMITTEE: W.D. Cochran, F.C. Fekel, T. Mazeh, N. Morrell, B. Nordström, H. Quintana, R.P. Stefanik, S. Udry

Attendance: The meeting opened at 2:00 p.m. on Thursday 10 August 2000 with 20 members in attendance.

1. President's report

1.1. Membership

The president reported that the following new members had joined Commission 30 since the last IAU General Assembly in Kyoto in 1997: M. Al-Malki (Saudi Arabia), H.-H. Bernstein (Germany), J.-L. Beuzit (France), J.de Madeiros (Brazil), D. Dravins (Sweden), T. Forveille (USA), D.F. Gray (Canada), G.R. Isaak (U.K.), B. Khamseh (Iran), D. Mkrtychian (Ukraine), R. Noyes (USA), F. Pepe (Switzerland), C. Perrier-Bellet (France), D. Popper (USA), D. Pourbaix (Belgium), F. Royer (Switzerland), E. Rubinstein (USA), J.-P. Sivan (France), D.J. Stickland (U.K.), L. Szabados (Hungary), G. Szecsenyi-Nagy (Hungary), and J. Vinko (Hungary). The above list includes 6 new members who have applied to join the IAU and should be admitted in the closing General Assembly in Manchester.

In Sept. 1999 one distinguished member, D. Popper (USA), had deceased after only one year as a member of Commission 30. There has been one resignation from the Commission's membership (M. Grenon, Switzerland).

Following the Kyoto meeting in 1997, Commission 30 had 104 members and three consultants. Three years later there were 124 members and 3 consultants, a net increase of 20.

The President noted that at least 10 members either had no email address, or that their email address was unknown. In a few cases their exact whereabouts was also not known to the Commission.

1.2. Conference proposals

The President reported that in the last triennium the Commission had received 8 proposals for conferences for which the organizers sought the Commission's support. These were, with their respective proposers: Galactic astrophysics from Hipparcos to the future (H. Schwan, E. Schilbach), Sky surveys for the 3rd millennium (N. Brosch), The Sun in astrophysics (P. Foukal), Designations of stellar companions (H. Dickel), Formation of binary stars (H. Zinnecker), Binary stars in clusters (E. Milone), Extragalactic star clusters (E. Grebel, D. Geisler), Radial and non-radial pulsations as probes of stellar physics (J. Christensen-Dalsgaard, C. Aerts). The Commission had given support to all but one (Binary stars in clusters) of these proposals, though in some cases after recommended changes in emphasis of the proposal details.

In the last triennium the Commission had proposed and organized a conference on Precise Stellar Radial Velocities (IAU Colloquium 170) which was held in Victoria, B.C.,

Canada in June 1998 (ASP Conf. Ser. 185, edited by J.B. Hearnshaw and C.D. Scarfe, 1999).

1.3. Commission web site

The President reported the establishment of a Commission 30 website in 1998. The current URL is

<http://www.phys.canterbury.ac.nz/~phys012/iau30/iau30.html>.

Although this site still required considerable further development, the following links were functioning: (a) Aims and objectives of the Commission; Commission mission statement; (b) Officers and organizing committee for Commission 30; (c) List of members of the Commission; (d) List of keycodes, giving areas of interest of Commission members; (e) Rules for the election of officers and the organizing committee; (f) List of past Presidents and Vice-Presidents of the Commission; (g) Report of Comm. 30 business meetings; (h) Comm. 30 newsletters; (i) Comm. 30 scientific report for the triennium 1996–99; (j) Report on IAU Coll. 170, Precise Stellar Radial Velocities, June 1998; (k) IAU Division IX homepage; (l) Radial velocity bibliography and catalogue; (m) Radial-velocity standard stars; (n) Extrasolar planets.

1.4. Triennial report of Commission 30

The triennial scientific report of Commission 30 was published in 1999 in the Reports on Astronomy (ed. J. Andersen), being Vol. XXIVA, covering the work accomplished in the previous triennium. The president thanked the following authors who had contributed to sections of the report: H. Quintana (radial velocities of galaxies), F.C. Fekel (the Milky Way), N. Morrell (star clusters), T. Mazeh (spectroscopic binaries), A.A. Tokovinin (pulsating stars), W.D. Cochran (extrasolar planets), R.P. Stefanik and S. Udry (standard radial-velocity stars), H. Levato (stellar radial-velocity bibliography).

2. Election of new organizing committee and Vice-President

Andrei Tokovinin, formerly of the Sternberg Astron. Institute Moscow but now at ESO, Garching, Germany, was appointed unopposed as the new President of Commission 30 for the triennium commencing August 2000. In early 2001 he will be located at CTIO, Chile. An election had been held for the new Vice-President, there being two candidates, A.P. Fairall (Cape Town) and B. Nordström (Copenhagen). The result, which was announced in June, was 25 votes for Nordström and 19 votes for Fairall; a recommendation that Nordström be appointed the next Vice-President has been sent to the General Secretary of the IAU.

Four members of the Commission's organizing committee retire in Aug. 2000 after 6 years' service. They are W. Cochran (Austin, Texas), F. Fekel (Nashville, Tenn.), B. Nordström (Copenhagen), R. Stefanik (Cambridge, Mass.). The President thanked them for their service to the Commission's work.

They are replaced by four new committee members; there being four nominations for four vacancies, so they are appointed unopposed. The new members of the organizing committee are D. Dravins (Lund, Sweden), L. Szabados (Budapest), M. Smith (Baltimore) and H. Levato (San Juan, Argentina). They will normally serve until 2006.

Four existing members of the committee will continue to serve until 2003. They are T. Mazeh (Tel Aviv), N. Morrell (La Plata, Argentina), H. Quintana (Santiago, Chile), S. Udry (Geneva).

3. Report on stellar radial-velocity catalogues

S. Malaroda, H. Levato and S. Pico (San Juan, Argentina) prepared a written report on their work on the bibliographic catalogue of stellar radial velocities, which was read from the chair. The authors of the report stated that their present radial-velocity catalogue is a continuation of the previous version (1991–94) published by Malaroda et al. (A&AS 144, 1). They reported that they are scanning 21 astronomy journals for published radial-velocity data, including all the most important journals. The 1991–96 version of the catalogue has 23 358 entries, which is about 10 thousand more than in the period 1991–94. By the end of 2000 the complete catalogue for 1991–99 will be published, with updates every 6 months thereafter. The radial-velocity catalogue can be accessed on the WWW at <http://www.casleo.gov.ar/> and enquiries can be directed to the coordinator of the cataloguing programme, H. Levato, at hlevato@casleo.gov.ar.

4. Statement on galaxy redshift catalogues

None of the Commission's members working on galaxy redshifts was present, but J. Huchra (Cambridge, MA) sent a written note pointing out the rapidly changing scene for galaxy redshifts, as a result of the AAT 2dF survey being well underway and the Sloan and 2MASS starting up, and also as a result of new telescopes coming online with multiaperture and multifiber systems. Huchra noted that there were 140 000 galaxies with redshifts in the CfA catalogue at present, and that excludes any redshifts from 2dF. He estimated that in five years the number will almost certainly exceed a million. A website with further information is

<http://cfa-www.harvard.edu/~huchra>.

5. Report on standard RV stars

S. Udry (Observ. de Genève) presented the updated lists of the late-type radial velocity standard stars. The first list is a "cleaned" update on the previous IAU standard list, based on long-time-span CORAVEL data. It includes many giants known to possess an intrinsic velocity variability at the level of a few hundred m/s or less. This list is useful for low- and medium-precision work. Using the high-precision velocities from the Elodie spectrometer, it was possible to correct the small systematic color terms in the CORAVEL velocities. A set of 350 dwarf stars is being followed with this new instrument with a precision of 10 m/s and zero-point stability of few m/s, to form in the future a new set of high-precision standards. The initial version of this list is also presented. Both lists are found at

<http://obswww.unige.ch/~udry/std/std/html>.

C. Scarfe presented the results of photographic standard star measurements at Victoria, with a precision of 150 m/s over a time span of almost 20 years, with an absolute zero-point linked to asteroids with a precision of 100 m/s or better. The comparison with Elodie velocities shows an absence of any color terms.

The current state of RV standards is reflected in several publications of the IAU Colloquium 170. It has been decided that F. Fekel, C. Scarfe, S. Udry, and R. Stefanik should continue to serve as members of the RV standard star Working Group, with further work in establishing the RV standards. It was noted that the list of standard velocities in the *Astronomical Almanac* is outdated, and should be replaced by the new IAU-approved list.

6. Proposal for a new Working Group to establish a catalogue of orbital elements of spectroscopic binary systems (COESBS)

At the business meeting of Commission 30 in 1991 it was already recognized that the work on the COESBS is no longer continued at Victoria, and no succession was assured. To remedy

the situation, it is now decided to create a Working Group of Comm. 30, with the aim of publishing in a few years the 9th edition of COESBS on the Web. The WG members are: A. Tokovinin (chair), A. Batten, W. Hartkopf, B. Mason, F. Fekel, D. Latham, N. Morrell, H. Levato, D. Pourbaix, S. Udry. By the end of 2000, a concept for COESBS9 will be prepared and the development of the corresponding software tools will be started by D. Pourbaix. The actual compilation work will be distributed between several contributors, co-ordinated by a single editor. COESBS will be continuously updated.

H. Levato (San Juan, Argentina) has written that his group, who are already undertaking the stellar radial-velocity bibliography, is able to collect all the orbits determined spectroscopically reported in the literature since the publication of A. Batten et al.'s catalogue in 1989 (A.H. Batten, J.M. Fletcher, D.G. MacCarthy, Publ. DAO vol. XVII (1989)). However he did not have the human resources to judge orbit quality, as Batten et al. had done. It would be relatively easy to extract the papers with orbits from the bibliography already compiled.

7. Report on radial velocities from IUE spectra

M. Smith (Baltimore, MD) reported on the extraction of radial velocities from the IUE data. The velocities are determined by cross-correlation of individual échelle orders, and calibrated using the HST GHRS spectra. It is found that the IUE velocity system is good to a few km/s, and that the absolute zero point of the 1175–1765 Å data is -0.9 ± 3 km/s.

8. General business

W. Hartkopf (USNO) reported briefly on the new, 5th edition of the visual binary orbit catalogue, which will be accessible from October 2000 at <http://ad.usno.navy.mil/dsl>.

The meeting closed at about 3:30 p.m.

J.B. Hearnshaw
President of the Commission

with the assistance of A. Tokovinin
Vice-President of the Commission