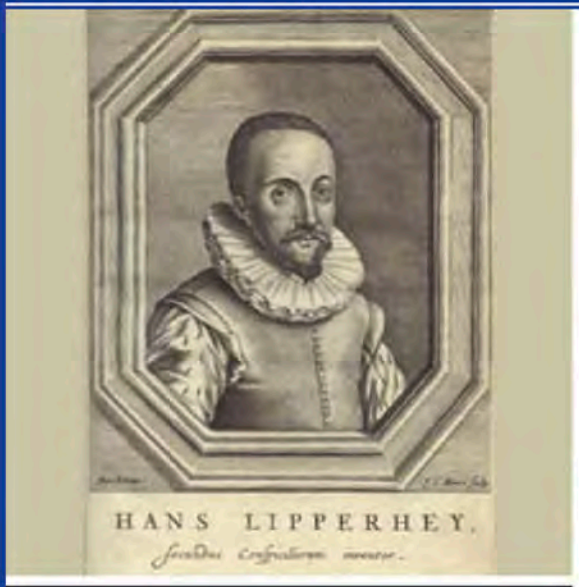
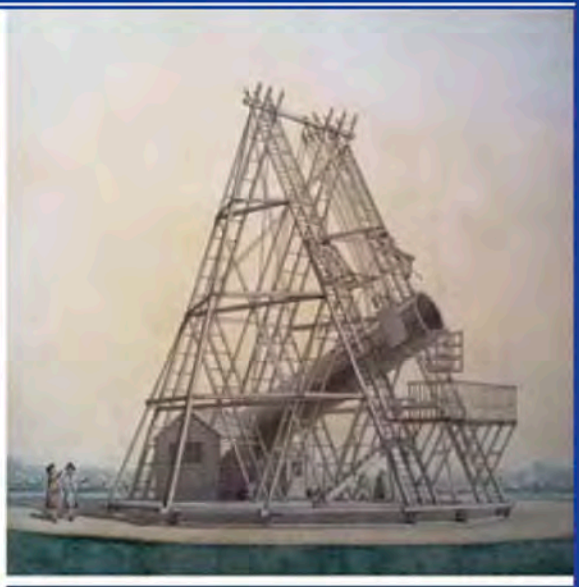
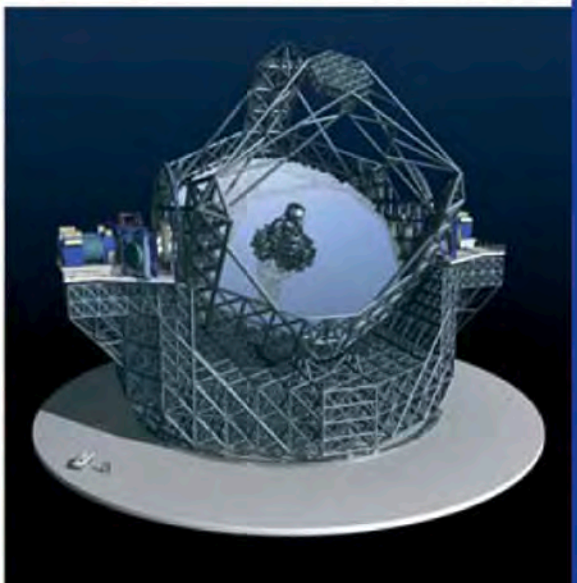
INTERNATIONAL ASTRONOMICAL UNION

UNION ASTRONOMIQUE INTERNATIONALE







INFORMATION BULLETIN JANUARY 2008

101

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CONTENTS **IAU Information Bulletin No. 101**

1. LEGEND TO THE COVER PICTURE

The year 2008 marks the 400th anniversary of the invention of the optical telescope by Hans Lipperhey (1570-1619), making it possible for Gelileo Galilei (1564-1642) in the next year to use it for astronomical purposes, which the IAU and the world will celebrate in the *International Year of Astronomy 2009*. The cover of this Bulletin shows Lipperhey's portrait and visualizes progress in telescope building by showing the 40-ft Herschel telescope (1789-1839), the NASA/ESA *Hubble Space Telescope* (1990-present), and the current design of the ESO European – Extremely Large Telescope (first light ~2017).

Hans Lipperhey (1570-1619)

Hans Lipperhey was born in Wesel (Germany) and settled in Middelburg, the capital of the province of Zeeland, the Netherlands, where he married in 1594 and became a citizen in 1602. His craft was that of spectacle-maker. Middelburg was a flourishing city, especially after the fall of Antwerp to the Spanish in 1585, which caused many of its protestant inhabitants to flee north, to the Netherlands.

New glass-making techniques were introduced in the Netherlands by Italians in the 1590s, and perhaps some ideas about combining lenses were known in this glass-making community. Although others have claimed the invention of the telescope – the device was impossible to keep secret – the earliest record of the existence of a telescope is a letter from the government of the province of Zeeland to its delegation in the Staten Generaal of the Netherlands, dated 25 September 1608, which instructs them to be of help to the bearer, *"who claims to have a certain device by means of which all things at a very great distance can be seen as if they were nearby, by looking through glasses which he claims to be a new invention"*. On 2 October 1608, the Staten Generaal discussed Lipperhey's application for a patent on the instrument. Although the patent was eventually denied, because it was felt that the design of the device could not be kept a secret, Lipperhey made several binocular telescopes for the Staten Generaal and was paid handsomely for his services. Shortly after that, the Staten Generaal was also petitioned by Jacob Metius of Alkmaar, a city in the north of the Netherlands, who also claimed to be the inventor. The claim of yet a third person, Sacharias Janssen, also a spectacle-maker in Middelburg, emerged several decades later. The surviving records are not sufficient to decide who was the actual (or as it was put in the seventeenth century, the first) inventor of the telescope. All one can say is that Hans Lipperhey's patent application is the earliest record of an actually existing telescope.

During his stay in Den Haag, Hans Lipperhey demonstrated the telescope to the Stadhouder, Prins Maurits van Oranje, and other court officials and diplomats who had gathered in this city for a peace conference. In that diplomatic environment, the vital importance of the telescope was grasped immediately. The news of the new strategic "spyglass" spread throughout Europe like

wildfire. As a result, Lipperhey was ordered to produce several telescopes. As said, a patent was not granted. But within less than six months after Lipperhey's demonstration in Den Haag, the telescope was in the possession of the most important European authorities: at least one telescope was owned by the Staten Generaal of the Netherlands; another was held by their commander-in-chief; a third and a fourth had been sent to the French King and his prime minister; another instrument was in the hands of the governor of the (at the time formally still Spanish) Netherlands; and even the Pope in Rome had received a telescope, a gift from one of the Vatican diplomats. The significance of the telescope increased further when, starting in 1609, Galileo Galilei used more powerful telescopes of "Dutch design" in Italy for his astronomical observations.

In 2008, a number of scientific meetings will be held to commemorate this landmark in the history of mankind. Those are listed in § 6.4. of this IB.

Provenance: Borello, Petro, 1656, *De vero telescopii inventore*, c*um brevi omnium conspiciliorum historia,* p.56. Original painting by Hendrick Berckmans, copperplate by J. van Meurs, 19×14 cm.

Reference: van Helden, A. 1977, *Transactions of the American Philosophical Society*, 67, no.4: *The Invention of the Telescope.* See also <http: galileo.rice.edu/science.html>.

The Herschel 40-ft telescope (1789-1839)

The great German-born British astronomer and composer Frederick William Herschel (1738-1822), discoverer of Uranus and moons of Saturn and Uranus, constructed more than four hundred telescopes during the course of his career. The largest and most famous of these was a reflecting telescope with 12-m focal length and 126-cm aperture, located at Slough (near Windsor), United Kingdom. On 28 August 1789, on his first night of observation using this telescope, he discovered a new moon of Saturn, Enceladus. The discovery of a second moon, Mimas, followed within the first month of observation. The 40-ft telescope proved cumbersome, however, and fell gradually into disuse late in Herschel's life – he last observed with the great reflector in 1814 –, till his son John finally condemned it in a ceremony in 1839. Most of William Herschel's observations were done with a smaller telescope, of 6.1-m focal length.

Provenance: Mr John Herschel-Shorland. Water-colour, ~1794, 32×32 cm.

References: Herschel, F.W. 1705, *Philosophical Transactions*, LXXXV, 347, *Description of a forty-feet reflecting telescope*; Hoskin, M. 2007, *The Herschels of Hanover* (Cambridge, UK: Science History Publications Ltd).

The NASA/ESA *Hubble Space Telescope*

Since the earliest days of astronomy with telescopes, since the time of Galileo, astronomers have shared a common goal, to see more, to see farther, to see deeper. The *Hubble Space Telescope*, launched in 1990, sped humanity to one of its greatest advances on that journey. *Hubble* is among the most successful and long-lasting science missions. It has beamed hundreds of thousands of images back to Earth, shedding light on many of the great mysteries of astronomy. Its gaze has helped to determine, *inter alia*, the age of the Universe, the identity of quasars, and the existence of dark energy.

Reference: < http://hubblesite.org/the_telescope/hubble_essentials/>

The ESO European Extremely Large Telescope

On 11 December 2006, the ESO Council gave green light to a detailed study of the European Extremely Large Telescope (E-ELT). This study will make it possible to start, in three years time, the construction of an optical/infrared telescope with a diameter of about 40-m, that will revolutionize ground-based astronomy. The combination of unprecedented acuity and light-gathering power of the E-ELT will provide unique images of objects at all scales, from solar and extra-solar planets to the points of first light in the Universe, and will also allow detailed spectral analysis of astronomical objects, thus revealing their nature, motions and characteristics. First light of the E-ELT is foreseen in ~2017.

Reference: < http://www.eso.org/projects/e-elt/>.

2. FAITS DIVERS

IAU Officers Catherine J. Cesarsky, Robert Williams, Karel A. van der Hucht and Executive Assistant Monique Léger-Orine were hosted by the National Organizing Committee of the *IAU XXVIIth General Assembly,* chaired by Daniela Lazzaro, on 20-24 August 2007 in Rio de Janeiro. The agenda was dominated by inspection of the convention center for GA2009 and detailed discussions on its organization. For the latest news from Brazil, see <www.astronomy2009.com.br>.

In early January 2008, the IAU Division Presidents and the Assistant General Secretary will be gearing up for review and selection of the numerous proposals for 2009 IAU Symposia, GA Symposia, Joint Discussions and Special Sessions.

The *Peter and Patricia Gruber Foundation Cosmology Prize 2007* was presented to Saul Perlmutter and Brian P. Schmidt, and the members of the *Supernova Cosmology Project* and the *High-z Supernova Search Team,* at Trinity College, University of Cambridge, UK, on 7 September 2007. See § 8.1. of this Bulletin.

The General Secretary and Richard J. Wainscoat, President of Div.XII/ Commission 50 on *Protection of Existing and Potential Observatory Sites* participated in a meeting of a joint Working Group on the *Starlight Reserve* concept and *Heritage of Science and Technology* at the UNESCO-World Heritage Center, Paris, on 10 October 2007. For details, see section § 10.5. of this Bulletin.

The past half year saw an impressive increase of actions and planning by the EC-Working Group on the *International Year of Astronomy 2009*. Details can be found in § 13. of this Bulletin, and at <http://www.astronomy2009.org/>. Outreach and communication is also the middle name of Division XII/Commission 55, which launched on 6 November 2007 the first edition of its journal *Communicating Astronomy with the Public* (*CAPjournal,* http://www.capjournal.org/>).

At the IAU Secretariat, Executive Assistant Monique Léger-Orine is now assisted by Maitena Mitschler (data base assistant), and part-time by Mary Noël-Giraud (editorial assistant) and Ginette Rude (archive assistant). Maintenance and development of the IAU data base and web site, contracted to ESO, continue to be handled very capably by Lars Lindberg Christensen, Raquel Y. Shida and Lars Holm Nielsen in Garching-bei-München.

2008 is around the corner and will offer you nine IAU Symposia and two RIMs: the *1st Middle-East African Regional IAU Meeting* and the *10th Asian-Pacific Regional IAU Meeting,* see § 6. of this Bulletin. This will keep many of you very busy.

It only rests me to extend to all IAU members my best wishes of the Season and for a scientifically very productive and gratifying New Year.

Karel A. van der Hucht, General Secretary, Paris, 1 December 2007

3. EVENTS AND DEADLINES

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Proposals for IAU Symposia in 2010
should reach the Assistant General Secretary
via the IAU Proposal Web Server <http://solarphys.uio.no/IAU/>
before 1 December 2008

Letters-of-Intent should be submitted to the AGS
before 15 September 2008

See: <http://www.iau.org/MEETINGS.6.0.html>

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2008

Jan 29-31	IAU Officers' Meeting, Paris, France
Feb 18-22	**IAU S251**, ***Organic Matter in Space***, Hong Kong, China Nanjing
Mar 1	Deadline for applications for the Peter and Patricia Gruber Foundation Fellowship 2008
Apr 5-10	**MEARIM 2008**, ***1st Middle-East African Regional IAU Meeting***, Cairo, Egypt
Apr 6-11	**IAU S252**, ***The Art of Modelling Stars in the 21st Century***, Sanya, China Nanjing
Apr 15	Due date for agenda items and documents for EC84, May 28-30, 2008
Apr 15	Due date for contributions to IAU IB 102
May 19-23	**IAU S253**, ***Transiting Planets***, Cambridge, MA, USA
May 28-30	84th IAU Executive Committee Meeting, Oslo, Norway
June 9-13	**IAU S254**, ***The Galaxy Disk in Cosmological Context***, Copenhagen, Denmark
June 16-20	**IAU S255**, ***Low-Metallicity Star Formation: from the First Stars to Dwarf Galaxies***, Rapallo, Liguria, Italy
July 1	Due date for contributions for *Transaction of the IAU, Volume XXVIIA, Reports on Astronomy 2006-2009*, by IAU Division Presidents, Commission Presidents, and chairpersons of Working Groups and Program Groups.
July 1-22	**IAU International School for Young Astronomers (PG-ISYA)**, Antalya, Turkey
July 28-Aug 1	**IAU S256**, ***The Magellanic System: Stars, Gas, and Galaxies***, Keele, UK

Aug 3-6	**APRIM 2008**, ***10th Asian-Pacific Regional IAU Meeting***, Kunming, Yunnan, China Nanjing
Sept 15	Due date for Letters-of-Intent proposing IAU Symposia in 2010
Sept 15-19	**IAU S257**, ***Universal Heliophysical Processes***, Ionnina, Greece
Oct 13-17	**IAU S258**, ***The Ages of Stars***, Baltimore, MD, USA
Nov 1	Due date for contributions to IAU IB 103
Nov 1	Due date for agenda items and documents for Officers' Meeting, January 27-29, 2009
Nov 1	Due date for Letters-of-Intent proposing to host the IAU XXIXth General Assembly in 2015
Nov 3-7	**IAU S259**, ***Cosmic Magnetic Fields: from Planets, to Stars and Galaxies***, Puerto Santiago, Tenerife, Spain
Dec 1	Due date for proposals for IAU Symposia in 2010
Dec 31	Deadline for nominations for the Peter and Patricia Gruber Foundation Cosmology Prize 2009

2009

Jan 27-29	IAU Officers' Meeting, Paris, France
Mar 1	Deadline for applications for the Peter and Patricia Gruber Foundation Fellowship 2009
Apr 1	Due date for Bid Books proposing to host the IAU XXIXth General Assembly in 2015
May 1	Due date for contributions to IAU IB 104
May 1	Due date for agenda items and documents for 85th IAU Executive Committee Meeting, Aug. 3-13, 2009
Aug 3-14	**IAU XXVIIth General Assembly**, Rio de Janeiro, Brazil
Sept 15	Due date for Letters-of-Intent proposing IAU Symposia in 2011
Nov 1	Due date for contributions to IAU IB 105
Nov 1	Due date for agenda items and documents for Officers' Meeting, January 2010
Dec 1	Due date for proposals for IAU Symposia in 2011
Dec 31	Deadline for nominations for the Peter and Patricia Gruber Foundation Cosmology Prize 2010

2012

Aug 20-31	**IAU XXVIIIth General Assembly**, Beijing, China Nanjing

4. IAU EXECUTIVE COMMITTEE

4.1. IAU Officers' Meeting 2008

The 2008 IAU Officers' meeting will take place 29-31 January 2008, at the IAU Secretariat, Paris, France.

4.2. 84th IAU Executive Committee Meeting

The IAU Executive Committee will have its 84th meeting in Oslo, Norway, 28-30 May 2008. The due date for agenda items and documents is 15 April 2008.

5. IAU GENERAL ASSEMBLIES

5.1. XXVIIth IAU General Assembly, 3-14 August 2009 Rio de Janeiro, Brazil

The scientific program of this General Assembly will be selected by the IAU Executive Committee and the IAU Division Presidents in their meeting in May 2008. The next IAU *Information Bulletin*, IB 102 (June 2008) will provide the complete IAU XXVIIth GA programme and details for registration. For recent information, visit the IAU XXVIIth GA web site:

<http://www.astronomy2009.com.br/index.html>.

5.2. XXVIIIth IAU General Assembly, 20-31 August 2012 Beijing, China Nanjing

See IB 100, pp. 26-27.

5.3. XXIXth IAU General Assembly, 2015 Deadlines for Letters-of-Intent and Proposals to Host

The IAU Executive Committee (EC) solicits proposals for hosting the XXIXth IAU General Assembly in July-August 2015. Letters-of-Intent are welcome before 1 November 2008. Complete bid books should reach the EC before the deadline of 1 April 2009. Rules and Guidelines are available at:
<http://www.iau.org/Instructions_for_Hosting_GAs.322.0.html>.

6. SCIENTIFIC MEETINGS

6.1. IAU SYMPOSIA in 2008

IAU S251 *Organic Matter in Space*

18-22 February 2008, Hong Kong, China Nanjing

Scientific Organizing Committee:
Peter F. Bernath (UK), , Thomas R. Geballe (USA), Thomas Henning (Germany), William M. Irvine (USA), Sun Kwok (co-Chair, China Nanjing), Karl M. Menten (Germany), Thomas J. Millar (UK), Yvonne J. Pendleton (USA), Scott A. Sandford (co-Chair, USA), Setsuko Wada (Japan) & Ernest Zinner (USA).

Local Organizing Committee:
Kwing Lam Chan, Kwong Sang Cheng, Albert C. Cheung, Allan S.C. Cheung, Sun Kwok (co-Chair), Chun Ming Leung, Junichi Nakashima, Steve B. Pointing & Jason C.S. Pun (co-Chair). All at UHK.

Principal Topics:
- Astronomical observations of organic compounds
- Organic compounds in solar system objects
- Laboratory spectroscopy and simulations of analogs of organic compounds in space.

Proceedings' Editors: Sun Kwok (Chief Editor) & Scott A. Sandford.

Contact: Sun Kwok <sunkwok@hku.hk>, <iau251@hku.hk>
URL: <http://www.hku.hk/science/iau251>

IAU S252 *Art of Modeling Stars in the 21st Century*

6-11 April 2008, Sanya, China Nanjing

Scientific Organizing Committee:
France Allard (France), W. David Arnett (USA), Isabelle Baraffe (France), Kwing Lam Chan (Hong Kong, China Nanjing), Cesare S. Chiosi (co-Chair, Italy), Werner Dappen (USA), Licai Deng (co-Chair, China Nanjing), Friedrich Kupka (Germany), Henny Lamers (Netherlands), Norbert Langer (Netherlands), John Lattanzio (Australia), Georges Meynet (Switzerland), Paolo Ventura (Italy), Achim Weiss (Germany), Lee Anne Willson (USA) & Da Run Xiong (China Nanjing).

Local Organizing Committee:
Yanchun Liang (Chair), Jun Yan, Kwing Lam Chan, Suijian Xue, Bing Zhao, Shaolan Bi, Fenghui Zhang, Yu Xin, Ye Lu, Chunlin Tian, Pin Lu & Xiaoshan Yun.

Principal Topics:
- Improvements of the physical ingredients of stellar models (opacities, nuclear reaction rates, neutrinos, e.o.s., initial composition)
- Progresses in understanding of physical processes (convection, rotation, internal waves, magnetic fields, mass loss, tidal mixing)

- Modeling the evolution of low and intermediate mass stars
- The evolution of massive stars with new physics on mass loss, rotation and mixing processes
- Physics and modeling of close binary evolution
- Stellar physics in the era of very large telescopes.

Proceedings' Editors: Licai Deng (Chief Editor), Kwing Lam Chan & Cesare S. Chiosi.

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IAU S253 ***Transiting Planets***

19-23 May 2008, Boston, MA, USA

Scientific Organizing Committee:
Gaspar A. Bakos (USA), Charles A. Beichman (USA), A. Collier Cameron (UK, David Charbonneau (USA), Tristan Guillot (France), David G. Koch (USA), Tsevi Mazeh (Israel), Norman Murray (Canada), Frederic Pont (Switzerland), Didier Queloz (co-Chair, Switzerland), Heike Rauer (Germany), Dimitar D. Sasselov (co-Chair, USA), Bun'ei Sato (Japan), Sara Seager (USA), Andrzej Udalski (Poland) & Alfred Vidal-Madjar (France).

Local Organizing Committee:
Matthew J. Holman (co-Chair), Lisa Kaltenegger, Carol Knell, Guillermo Torres (co-Chair) & Joshua N. Winn.

Principle Topics:
- Modeling the structure and the atmosphere of planets
- Ground base transit surveys
- The *CoRot* mission
- Planet characterization: Planet density (radial velocity follow-ups)
- Anti-transit measurement (planet emerging flux)
- Planet phase function
- Planet exosphere
- Future projects (*Kepler*, *JWST*, ...).

Proceedings' Editors: Frederic Pont (Chief Editor), Didier Queloz & Dimitar D. Sasselov.

Contact: Carol Knell <cknell@cfa.harvard.edu >
URL: <http://www.cfa.harvard.edu/events/2008/IAUS253/>

IAU S254 ***The Galaxy Disk in Cosmological Context***

9-13 June 2008, Copenhagen, Denmark

Scientific Organizing Committee:
Beatriz Barbuy (Brazil), James J. Binney (UK), Jonathan Bland-Hawthorn (co-Chair, Australia), Volker Bromm (USA), Bruce G. Elmegreen (USA), Eva K. Grebel (Switzerland), Bengt Gustafsson (Sweden), Amina Helmi (Netherlands), Ken'ichi Nomoto (Japan), Birgitta Nordström (co-Chair,

Denmark), Donald A. VandenBerg (Canada), Simon D.M. White (Germany) & Rosemary F. Wyse (USA) & P. Tim de Zeeuw (ESO).

Local Organizing Committee:
Johannes Andersen (Chair), Jens Viggo Clausen, Jens K. Knude, Birgitta Nordström & Kristian Pedersen.

Principal Topics:
- Disk galaxy meets LambdaCDM cosmology: Successes and failures
- Evidence of disk formation at high redshift
- Dark matter and stellar populations in the Milky Way disk and Local Group galaxies
- Stars as drivers and tracers of chemical evolution
- Interstellar matter and disk evolution
- Origin, structure, and evolution of disks
- Formation of the thin and thick disk: the bulge-bar-disk connection
- Abundance gradients and spatial and dynamical structures in disks
- Secular evolution of disks
- Panel discussion: challenges and prospects for the future.

Proceedings' Editors: Johannes Andersen (Chief Editor), Jonathan Bland-Hawthorn & Birgitta Nordström.

Contact: Birgitta Nordström <birgitta@astro.ku.dk>, <iau254@nbi.dk>
URL: <http://iau254.nbi.dk/>

IAU S255 ***Low-metallicity Star Formation: from the First Stars to Dwarf Galaxies***

16-20 June 2008, Rapallo, Liguria, Italy

Scientific Organizing Committee:
Roger A. Chevalier (USA), Eli Dwek (USA), Andrea Ferrara (Italy), Leslie Hunt (co-Chair, Italy), Deidre A. Hunter (USA), Yuri Izotov (Ukraine), Suzanne Madden (co-Chair, France), André Maeder (Switzerland), Francesca Matteucci (Italy), Sandra Savaglio (Germany), Daniel Schaerer (Switzerland), Raffaella Schneider (Italy), Evan D. Skillman (USA) & Eduardo Telles (Brazil).

Local Organizing Committee:
Emanuela Masini (Chair), Roberto Baglioni, Marco Grossi, Leslie Hunt & Raffaella Schneider.

Principal Topics:
- Population III and metal-free star formation
- Observational signatures of low-metallicity star formation
- Stellar populations at low metallicity
- Gamma-ray bursts and supernovae in low-metallicity environments
- The metal-poor interstellar medium: dust and atomic and molecular gas
- Metal enrichment and feedback.

Proceedings' Editors: Leslie Hunt (Chief Editor), Suzanne Madden & Raffaella Schneider.

Contact: Leslie Hunt <hunt@arcetri.astro.it>, <iaus255@arcetri.astro.it>
URL: <http://www.arcetri.astro.it/iaus255/>

IAU S256 ***The Magellanic System: Stars, Gas, and Galaxies***
28 July-1 August 2008, Keele University, Staffordshire, UK

Scientific Organizing Committee:
Beatriz Barbuy (Brazil), You-Hua Chu (USA), Gary S. Da Costa (Australia), Michael W. Feast (South Africa), Yasuo Fukui (Japan), Eva K. Grebel (Switzerland), Despina Hatzidimitriou (Greece), Mohammad Heydari-Malayeri (France), Jacobus Th. van Loon (Chair, UK), Ben Moore (Switzerland), Wolfgang Pietsch (Germany), Mónica Rubio (Chile), Snezana Stanimirovic (USA), Nolan R. Walborn (USA) & Lukasz Wyrzykowski (Poland).

Local Organizing Committee:
Nye W. Evans (Chair), Shirley Courthold, Rob Jeffries, Jacobus Th. van Loon, Iain McDonald, Joana M. Oliveira, Barry Smalley, Gemma Thomas, & Pauline Weston.

Principal Topics:
- recent/on-going surveys of the Magellanic System
- the structure and dynamics of the Magellanic System
- the properties of the interstellar and intergalactic medium
- the star formation process in the Magellanic Clouds
- the star formation history and chemical evolution
- the Magellanic Clouds as laboratories of stellar astrophysics
- the late stages of stellar evolution and stellar feedback
- Magellanic type systems as a class.

Proceedings' Editors: Jacobus Th. van Loon (Chief Editor) & Joana M. Oliveira.

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URL: <http://www.astro.keele.ac.uk/iaus256/>

IAU S257 ***Universal Heliophysical Processes***
15-19 September 2008, Ionnina, Greece

Scientific Organizing Committee:
Costas Allissandrakis (Greece), Arnold O. Benz (Switzerland), Lidia van Driel-Gesztelyi (UK), Claus Frölich (Switzerland), Sarah Gibson (USA), Jean-Louis Bougeret (France), Walter Gonzalez (Brazil), Natchimuthuk Gopalswamy (co-Chair, USA), Cristina Mandrini (Argentina), P.K. Manoharan (India), Marius S. Potgieter (South Africa), Kazunari Shibata (co-Chair, Japan), Alexander V. Stepanov (Russian Federation), Gérard Thullier (France), Bojan Vrsnak (Croatia), David F. Webb (co-Chair, USA) & Mei Zhang (China Nanjing).

Local Organizing Committee:

Alexander Nindos (Chair), Costas Allissandrakis, Angeliki Fotiadi, Vassiliki Tsikoudi, Georgia Tsiropoula & Seji Yashiro.

Principal Topics:

- Solar sources of heliospheric variability
- Origin, evolution and dissipation of magnetic structures
- Transport in heliospace: impact of magnetic structures
- Plasma processes: flows, obstacles, circulation
- Energetic particles in the heliosphere
- Heliophysical boundaries and interfaces including shock waves
- Solar-heliospheric variability on different time scales
- 3-D reconnection processes
- Turbulence in heliospace
- Physical processes in stellar systems.

Proceedings' Editors: Natchimuthuk Gopalswamy (Chief Editor) & David F. Webb.

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Local contact: Alexander Nindos <anindos@cc.uoi.gr>
URL: <http://iau257.uoi.gr/>

IAU S258 ***The Ages of Stars***

13-17 October 2008, Baltimore, MD, USA

Scientific Organizing Committee:

H.M. Antia (India), Nobuo Arimoto (Japan), Michael S. Bessell (Australia), Corinne Charbonnel (France/Switzerland), Vanessa M. Hill (France), Lynne A. Hillenbrand (USA), Birgitta Nordström (Denmark), David R. Soderblom (Chair, USA), Helio J. Rocha-Pinto (Brazil/USA), Eline Tolstoy (Netherlands), Donald A. VandenBerg (Canada), Rosemary F. Wyse (USA) & Maria Zoccali (Chile).

Local Organizing Committee:

Jeff Valenti (Chair), Thomas Brown, Katrina Exter, Roelof de Jong, Charles D. Keyes, I. Neill Reid, Massimo Roberto & Eva Villaver.

Principal Topics:

- The current state of solar and stellar models
- Observations and models of Population I clusters
- Observations and models of globular clusters
- Observations of resolved populations in the Local Group
- Evidence for age spreads within clusters and populations
- The star formation history of the Milky Way and Local Group galaxies
- Spectroscopic age indicators for stars: Li, rotation, activity, U/Th/Eu
- Age-metallicity relations
- Ages of planet-bearing stars and stars with proto-planetary disks
- Looking forward: Preparing for GAIA, SIM, JWST, and the next generation.

Proceedings' Editors: Eric Mamajek (Chief Editor), David R. Soderblom & Rosemary F. Wyse.

Contact: David R. Soderblom <drs@stsci.edu>
URL: <http://www.stsci.edu/institute/conference/iau258>

IAU S259 ***Cosmic Magnetic Fields: from Planets, to Stars and Galaxies***

3-7 November 2008, Puerto Santiago, Tenerife, Spain

Scientific Organizing Committee:
Eduardo Battaner (Spain), Rainer Beck (Germany), John E. Beckman (co-Chair, Spain), Claude Catala (France), Andrew Collier-Cameron (UK), Richard M. Crutcher (USA), Karl-Heinz Glassmeier (Germany), Karel A. van der Hucht (Netherlands), Alexander G. Kosovichev (co-Chair, USA), Cristina H. Mandrini (Argentina), Gauthier Mathys (Chile), Donald B. Melrose (Australia), Hiromoto Shibahashi (Japan), Klaus G. Strassmeier (co-Chair, Germany), Lev M. Zeleny (Russian Federation) & Shuang Nan Zhang (China Nanjing).

Local Organizing Committee:
John E. Beckman (Chair), Rainer Arlt, Katrin Götz & Valentin Martínez Pillet.

Principal Topics:

- magnetic fields in star-forming regions
- the multi-scale field of the Sun and its interior
- the Jupiter-Io system
- heliospheric and interplanetary fields
- Earth's magnetic field
- surface fields of cool and hot stars and of degenerate objects
- planetary-nebulae shaping by magnetic fields, jet and accretion-disk fields: from stars to AGNs and beyond
- fields around stellar black holes and magnetars, supernovae, the magnetic field of the Galactic center; the Galactic field (is there a magnetic web in our Milky Way?)
- fields of spiral galaxies
- instrumentation and techniques for measuring magnetic fields across all wavelengths, from the ground and space, with emphasis on soon-to-come facilities (optical, IR, FIR/sub-mm, radio).

Proceedings' Editors: Klaus G. Strassmeier (Chief Editor), Alexander Kosovichev & John E. Beckman.

Contact: Klaus G. Strassmeier <kstrassmeier@aip.de>

Local contact: John E. Beckman <jeb@iac.es>
URL: http://www.aip.de/IAUS259/

For a complete overview of IAU scientific meetings, see:
<http://www.iau.org/IAU_MEETINGS.110.0.html>.

6.2. Regional IAU Meetings in 2008

MEARIM 2008 *1st Middle-East Africa Regional IAU Meeting*

5-10 April 2008, Cairo, Egypt

Scientific Organizing Committee:
Ali Ajabshirizadeh (Iran), Athem W. Alsabti (co-Chair, Iraq/UK), C. Hassan Basurah (Saudi Arabia), Volker Bothmer (Germany), Catherine J. Cesarsky (France), Dirk K. Callebaut (Belgium), Avishai Dekel (Israel, TBC), Nidhal Guessoum (United Arabic Emirates), Ahmed Abdel Hady (co-Chair, Egypt), Mouner A.M. Hamdy (Egypt), M. Tarek Hussain (Egypt), Ali Hussien (Kuwait), Abebe Kebede (Ethiopia), Atila Ozguc (Turkey), Amory-Mazaudier (France), Franco Porcelli (Italy), Nour Raouafi (Tunisia), Georgia Tsiropoula (Greece), Jaime Vilinga (Angola), Mamdouh I. Wanas (Egypt), Brian Warner (South Africa) & David F. Webb (USA).

Local Organizing Committee:
Ahmed Abdel Hady (Chair), Hamid Alnaimiy, Rabab Helal, Ahmed Khater, Ahmed Salama, Salah Mahmoud & Shahinaz Yousef.

Proceedings' Editors: Athem W. Alsabti (Chief Editor), Ahmed Abdel Hady & Volker Bothmer.

Contact: Ahmed Abdel Hady <aahady@cu.edu.eg>, <aahady@yahoo.com>
URL: < http://www.mearim.cu.edu.eg/>

APRIM 2008 *10th Asian-Pacific Regional IAU Meeting*

3-6 August 2008, Kunming, Yunnan, China Nanjing

Scientific Organizing Committee:
Brian J. Boyle (Australia), Gregory G. Fahlman (Canada), Leonardo Bronfman (Chile), John B. Hearnshaw (New Zealand), John P. Huchra (USA), Satoru Ikeuchi (Japan), Norio Kaifu (Japan), Iraida S. Kim (Russian Federation), Sun Kwok (China Nanjing), Hyung Mok Lee (Korea RP), Yan Li (China Nanjing), Hakim L. Malasan (Indonesia), Shin Mineshige (Japan), Jayant Vishnu Narlikar (India), Premana W. Premadi (Indonesia), Russ Taylor (Canada), Shuang Nan Zhang (China Nanjing) & Gang Zhao (Chair, China Nanjing).

Local Organizing Committee:
Jzhanwen Han, Jun Lin, Zhong Liu & Jiangcheng Wang .

Proceedings' Editors: Shuang Nan Zhang, Yan Li & Qing Juan Yu.

Contact: Jiancheng Wang <j.c.wang@public.km.yn.cn>, <aprim@ynao.ac.cn>
URL: <http://www.ynao.ac.cn/~aprim/index.html>

6.3 Post Meeting Reports 2007

Post Meeting Reports of IAU meetings in 2007 are available at <http://www.iau.org/Post_Meeting_Reports.326.0.html>.

6.4. Other meetings of astrophysical interest

PRCSA 2008 8th Pacific Rim Conference on Stellar Astrophysics

5-9 May 2008, Phuket, Thailand

Contact: Kam Ching Leung <kleung@unlserve.unl.edu>
URL: <http://www.narit.or.th/conference-prcsa2008/>

COSPAR 2008 - 50th Anniversary Assembly

37th Scientific Assembly of the Committee on Space Research and Associated Events
13-20 July 2008, Montreal, Canada

Contact: COSPAR Secretariat <cospar@cosparhq.cnes.fr>
URL: <http://www.cospar2008.org/>, <http://www.cospar-assembly.org/>

Joint European and National Astronomy Meeting - JENAM 2008 "New Challenges to European Astronomy"

2-12 September 2008, Vienna, Austria

Contact: Gerhard Hensler <hensler@astro.univie.ac.at>
URL: <http://www.univie.ac.at/jenam2008 >

The Invention of the Dutch Telescope - Its Origin and Impact on Science, Culture and Society, 1550-1650

25-27 September 2008, Middelburg, the Netherlands

Contact: <Huib.Zuidervaart@huygensinstituut.knaw.nl>
URL: <www.roac.nl>

400 Years of Astronomical Telescopes - A Review of History, Science and Technology

29 September-2 October 2008
ESA-ESTeC, Noordwijk, the Netherlands

Contact: Bernhard Brandl <brandl@strw.leidenuniv.nl>
URL: http://www1.cadc-ccda.hia-iha.nrc-cnrc.gc.ca/cadcbin/meetings/getMeetings.pl?meeting_no=2291

Astronomy and its Instruments before and after Galileo

28 September 2009-3 October 2009, Venice, Italy

Contact: Luisa Pigatto <luisa.pigatto@oapd.inaf.it>
URL: http://www1.cadc-ccda.hia-iha.nrc-cnrc.gc.ca/cadcbin/meetings/getMeetings.pl?meeting_no=2394

For other meetings of astrophysical interest, see the International Astronomy Meetings List, maintained by Liz Bryson of the Canada-France-Hawaii Telescope Corporation, at
<http://www3.cadc-ccda.hia-iha.nrc-cnrc.gc.ca/meetings/> .

7. IAU PUBLICATIONS

7.1. IAU Highlights of Astronomy

Highlights of Astronomy, Volume 13

AS PRESENTED AT THE XXV th GENERAL ASSEMBLY OF THE IAU

Sydney, Australia, 13-26 July 2003
Ed. Oddbjørn Engvold
(San Francisco: ASP) ISBN: 1-58381-189-3, August 2006

Highlights of Astronomy, Volume 14

AS PRESENTED AT THE XXVI th GENERAL ASSEMBLY OF THE IAU

Prague, Czech Republic, 14-25 August 2006
Ed. Karel A. van der Hucht
(Cambridge: CUP) ISBN-13: 978 0521 89683 2, December 2007
URL: < http://journals.cambridge.org/action/displayJournal?jid=IAU >

7.2. IAU Transactions

Transactions of the IAU, Volume XXVB

PROCEEDINGS OF THE XXV th GENERAL ASSEMBLY OF THE IAU

Sydney, Australia, 13-26 July 2003
Ed. Oddbjørn Engvold
(San Francisco: ASP) (in press)

Transactions of the IAU, Volume XXVIA

REPORTS ON ASTRONOMY 2003-2006

Ed. Oddbjørn Engvold
(Cambridge: CUP) ISBN-10: 0-521-85604-3, March 2007
URL: <http://journals.cambridge.org/action/displayIssue?jid=IAU&volumeId=1&issueId=T26A>

Transactions of the IAU, Volume XXVIB

PROCEEDINGS OF THE XXVI th GENERAL ASSEMBLY OF THE IAU

Prague, Czech Republic, 14-25 August 2006
Ed.: Karel A. van der Hucht
(Cambridge: CUP) (due May 2008)

7.3. IAU Symposium Proceedings, published in 2007

As of 2004, starting with IAU S222, the IAU Symposium Series is being published by Cambridge University Press, Cambridge, UK (CUP).
E-version, see: <http://journals.cambridge.org/action/displayJournal?jid=IAU>.
Print, see: <http://www.cambridge.org/uk/series/sSeries.asp?code=IAUP>.

IAU S235 ***Galaxy Evolution across the Hubble Time***
14-17 August 2006, Praha, Czech Republic
Eds. Françoise Combes & Jan Palous
(Cambridge: CUP) ISBN: 0-521-86344-9, March 2007

IAU S236 ***Near Earth Objects, our Celestial Neighbors: Opportunity and Risk***
14-18 August 2006, Praha, Czech Republic
Eds. Andrea Milani, Giovanni B. Valsecchi & David Vokrouhlicky
(Cambridge: CUP) ISBN: 0-521-86345-7, May 2007

IAU S237 ***Triggered Star Formation in a Turbulent ISM***
14-18 August 2006, Praha, Czech Republic
Eds. Bruce G. Elmegreen & Jan Palous
(Cambridge: CUP) ISBN: 0-521-86346-5, April 2007

IAU S238 ***Black Holes: from Stars to Galaxies- across the Range of Masses***
21-25 August 2006, Praha, Czech Republic
Eds. Vladimir Karas & Giorgio Matt
(Cambridge: CUP) ISBN: 0-521-86347-3, May 2007

IAU S239 ***Convection in Astrophysics***
21-25 August 2006, Praha, Czech Republic
Eds. Friedrich Kupka, Ian W. Roxburgh & Kwing Lam Chan
(Cambridge: CUP) ISBN: 0-521-86349-X, May 2007

IAU S240 ***Binary Stars as Critical Tools and Tests in Contemporary Astrophysics***
22-25 August 2006, Praha, Czech Republic
Eds. William I. Hartkopf, Petr Harmanec & Edward F. Guinan
(Cambridge: CUP) ISBN: 0-521-86348-1, July 2007

IAU S241 ***Stellar Populations as Building Blocks of Galaxies***
10-14 December 2006, La Palma, Canary Islands, Spain
Eds. Alexandre Vazdekis & Reinier F. Peletier
(Cambridge: CUP) ISBN: 0-521-86350-3, August 2007

IAU S242 ***Astrophysical Masers and their Environments***
12-16 March 2007, Alice Springs, Australia
Eds. Jessica M. Chapman & Willem A. Baan
(Cambridge: CUP) ISBN: 0-521-87464-5 (in preparation)

IAU S243 ***Star-Disk Interaction in Young Stars***
21-25 May 2007, Grenoble, France
Eds. Jérôme Bouvier & Immo Appenzeller
(Cambridge: CUP) ISBN: 0-521-87465-3, November 2007

IAU S244 ***Dark Galaxies and Lost Baryons***
25-29 June 2007, Cardiff, UK
Eds. Jonathan I. Davies & Michael D. Disney
(Cambridge: CUP) ISBN: 0-521-87466-1 (due February 2008)

IAU S245 ***Formation and Evolution of Galaxy Bulges***
16-20 July 2007, Oxford, UK
Eds. Martin G. Bureau, Evangelia Athanassoula & Beatriz Barbuy
(Cambridge: CUP) ISBN: 0-521-87467-X (due February 2008)

IAU S246 ***Dynamical Evolution of Dense Stellar Systems***
5-9 September 2007, Capri, Italy
Eds. Enrico Vesperini, Miroslav Giersz & Alison I. Sills
(Cambridge: CUP) ISBN: 0-521-87468-8 (in preparation)

IAU S247 ***Waves and Oscillations in the Solar Atmosphere: Heating and Magneto-Seismology***
17-21 September 2007, Porlamar, Isla de Margarita, Venezuela
Eds. César A. Mendoza-Briceño & Robert Erdelyi
(Cambridge: CUP) ISBN: 0-521-87469-6 (in preparation)

IAU S248 ***A Giant Step: from Milli- to Micro-arcsecond Astrometry***
15-19 October 2007, Shanghai, China Nanjing
Eds. Wenjing Jin, Imants Platais & Michael A.C. Perryman
(Cambridge: CUP) ISBN: 0-521-87470X (in preparation)

IAU S249 ***Exoplanets: Detection, Formation and Dynamics***
22-26 October 2007, Suzhou, China Nanjing
Eds. Sylvio Ferraz Mello, Yi-Sui Sun & Ji-Lin Zhou
(Cambridge: CUP) ISBN: 0-521-874718 (in preparation)

IAU S250 ***Massive Stars as Cosmic Engines***
10-14 December 2007, Kauai, Hawaii, USA
Eds. Fabio Bresolin, Paul A. Crowther & Joachim Puls
(Cambridge: CUP) ISBN: 0-521-87472-6 (TBD)

For a complete list of IAU Symposium Proceedings, please check:
<http://www.iau.org/Symposia_Colloquia.122.0.html>.

7.4. Other IAU-Related Publications

Comet/Asteroid Impacts and Human Society. An Interdisciplinary Approach

Peter Bobrowsky and Hans Rickman, eds., 2007
(Berlin, Heidelberg: Springer Verlag) ISBN-13: 978-3-540-32709-7

Astronomy for the Developing World

John Hearnshaw and Peter Martinez, eds., 2007
Proceedings of Special Session 5 of the IAU XXVIth General Assembly, Prague, Czech Republic, 2006,
(Cambridge: CUP), ISBN-13: 978-0521-87657-5

8. THE IAU AND THE PETER AND PATRICIA GRUBER FOUNDATION

8.1. PPGF Cosmology Prizes

PPGF Prize 2007

The Peter and Patricia Gruber Foundation Cosmology Prize 2007 was presented to Saul Perlmutter and Brian P. Schmidt, and the members of the *Supernova Cosmology Project* and the *High-z Supernova Search Team,* at Trinity College, University of Cambridge,, UK, 7 September 2007. A verbal report.

Welcome by Simon Mitton, Fellow of St Edmund's College, Cambridge, UK

Ladies and gentlemen:

A very warm welcome to all of you. Welcome to our beautiful city of Cambridge, to the University and to Trinity College, which has such strong associations with great cosmologists, physicists and mathematicians, for centuries. It is a wonderful afternoon and I hope you are going to have a really enjoyable, and above all, a memorable, experience at this presentation ceremony. Anyway, it is wonderful being here. Thank you so much, those who could make huge efforts. Some people, I know, have traveled halfway across the globe to get here this afternoon. That's great. I am now going to hand you back to Patricia Gruber, President of the Peter and Patricia Gruber Foundation.

Introduction by Owen J. Gingerich, PPGF Prize Advisor,
Harvard-Smithonian Center for Astrophysics, Cambridge, MA, USA

The Gruber Foundation has typically chosen as the venues for its cosmology prize presentations places where memorable cosmologists of the past have walked and worked. The first two prizes were awarded at the Vatican, in the shadow of Galileo. The third prize, in Bern, remembered Einstein at his stand-up desk in the Patent Office, where in his spare time he labored over his theory of relativity. In Cracow we admired the holograph manuscript of Copernicus' *De revolutionibus* as well as honoring a modern-day cosmologist. And in Prague, even as we joined with the IAU, we were reminded of the fateful meeting there of Kepler and Tycho.

The greatest of our cosmological forebears were unifiers, combining what had been disparate phenomena into unified patterns. Copernicus took the planets, once seen as separate entities, and joined them into a closely linked heliocentric system. "Only in this arrangement", he declared, "do we find a sure commensurability between the size of their orbits and their periods of revolution". But in a sense Copernicus was not Copernican enough, for the earth alone moved about the sun at a constant speed. It took Kepler, a true astro*physicist*, to correct that defect, bringing a richer unity to the system even on his way toward the ellipse. And I barely need to mention the staggering unity of space and time, or of matter and energy, brought about by Einstein.

Today we are walking where Isaac Newton walked. We can look out of the windows of this hall, across the courtyard, to the rooms above and left of the gate where Newton penned his *Principia*. If there were windows on the other side of this space, we could look down on the arcade where he carried out some of his acoustical experiments, or across to the Wren Library, which houses many of the books he consulted. "Kepler just guessed the law of areas", Newton sniffed, "but I have proved it". We think of Newton, his telescope and his prism. We remember the differential and the integral calculus. And of course we recall his famous laws of motion and the theory of gravitation. Yet if we could remember but one towering contribution, it would be of Newton as a great unifier, abolishing the commonsensical but false dichotomy that came down to the Western World from Aristotle, celestial physics separate and very different from terrestrial physics. Newton welded earth and sky together. It was not just a theory of gravitation, but *universal* gravitation.

How appropriate to meet on Newton's home turf to award a prize that honors yet another astonishing aspect of universal gravitation!

Introduction by Patricia Murphy Gruber, President PPGF

We are very pleased to have the Cosmology Prize here in Cambridge, and we would like to thank our partners at the International Astronomical Union, who co-sponsored this Prize with us. We have with us President Catherine J. Cesarsky of the International Astronomical Union and the General Secretary, Karel A. van der Hucht. Thank you. Also thanks to Trinity College that we are here today, and we especially thank Lord Rees, and Simon Mitton who behind the scenes has done so much to make this possible.

The Cosmology Prize was the very first of our Prize program, and we now have five annual Prizes: in Cosmology, Genetics, Neuroscience, Justice, and Women's Rights. These Prizes honor achievements that produce fundamental shifts in human knowledge and culture. My husband, Peter Gruber, is the founder of the Foundation and it has been his initial vision that was the key in establishing these Prizes. Peter will say a few words about the Cosmology Prize in particular.

Introduction by Peter Gruber, Chairman PPGF Board

When I was a young boy, I heard the expression which I have always remembered, which is that brevity is the soul of wit. So I am going to be quite brief, but let me just tell you a little bit of a story, to associate why I gave this Prize and why we decided on this Prize. Essentially, when I was about eleven years old, I was in boarding school and the head was brother Darcy – it was run by Irish Christian brothers –, this was in India at that time. Those people who helped him in his garden – he loved his garden – got at night to look through the telescope and see the stars and get a little bit of knowledge about the history of the stars as well as a little bit of knowledge and interest in the subject. And ever since that time, I have been fascinated by the greater cosmos. And it always had a very interesting, almost a fascination. It is very hard to describe;

those who have it, have it and those who do not, have it in something else, I am sure. It has always given me a lot of pleasure and I just want to share that with you. And that was one of the reasons why we choose the Cosmology Prize. I think that pretty well covers my point. Thank you so much.

Introduction by Patricia Murphy Gruber, continued

Now to the 2007 Cosmology Prize. The Prize carries a gold medal and an unrestricted cash prize of US$ 500,000.-, shared this year between two principal investigators and their teams. The 2007 recipients are Saul Perlmutter and Brian Schmidt, and their teams the *Supernova Cosmology Project* and the *High-z Supernova Search Team*, for their discovery that the expansion of the Universe is accelerating. Before I invite Saul and Brian to speak, I would like to ask two of our advisors, professor Virginia Trimble and professor Jim Peebles, to speak briefly about the achievements that netted the Prize to these particular recipients.

Laudation by Virginia L. Trimble, PPGF Prize Advisor, UC Irvine, CA, USA

Back to the time of the first written records (and perhaps before), people have been asking: How big is the world? How old is it? What is it made of? Where did it come from, and what will become of it? The answers over a couple of millennia have tended to evolve in the direction of larger sizes, longer duration, more kinds of stuff, and more interesting and complex origins, at least if you prefer inflation and brane worlds to *Vayomer adonai: Yýi or, v'sedot magneteyim*.

Shortly before I was born, perhaps around 1600, there began a trend in favor of trying to answer such questions with precision observations and accurate experiments. It is to that tradition that today's Prize winners belong. They are also, by a margin of a decade or more, the youngest winners to date, which is surely a good omen. On the other hands, it means that Drs. Perlmutter and Schmidt have witnessed rather little of those multi-century trends I just mentioned, from their home bases in California and Australia (two, I would claim, of the most beautiful places in the world).

For instance, the cosmos of the ancients could be circumnavigated by a human in a lifetime and by a God in a day (Phaeton in his chariot or Aten in his boat), while these days even light will take gigayears, perhaps an infinite number of them. Similarly, the old world was perhaps a few hundred generations old, and the end was at hand, which no longer seems to be the case, at least on a cosmological timescale. As for the contents, earth, air, fire, and water are all baryons, while today we have also neutrinos, photons, and dark matter. Quintessence, however, like the poor, is always with us.

New stars have been part of that inventory since 1572, when Tycho, perhaps the first precision observer, and others showed that his event – now known to have been a supernova – was outside the sphere of the moon. Supernovae were recognized as a distinct class by 1933. The idea that they might be useful for cosmology is also older than our winners, and indeed older than I, for it appears

first in a pair of papers in 1939, one by Olin C. Wilson (whom you may not have heard of) and one by Fritz Zwicky (whom you probably have). They had in mind to use them as standard candles, of which you will soon hear more, though Zwicky also noted that time-dilation of distant events could rule out tired light and so make it nearly certain that we live in an expanding Universe. I think, by the way, that the Supernova Teams have not emphasized this as much as they could or should, leaving some of our otherwise seemingly sensible colleagues in doubt about this issue.

This brings us to 1997 and the IAU XXIIIrd General Assembly in Kyoto, where we did not vote about Pluto. A panel of cosmologists did, however, vote for their favorite cosmological parameters. The data then included the ages of the oldest stars, big bang nucleosynthesis, the *COBE* fluctuations of the microwave background (honored last year), the mass-to-light ratios of the largest clusters and superclusters of galaxies, and calculations of how those might have formed. And the best-buy numbers, according to a former Plumian professor (not present here today), were a Hubble constant of 75, a baryon contribution of 5%, dark matter 30%, probably cold, and a cosmological constant for the remaining 65%.

And this is clearly the point at which I should hand over to professor Peebles, to explain to you at a more technical level what has happened since, and what it means.

Thank you.

Laudation by P. James E. Peebles, Member Advisory Board
Princeton University, NJ, USA

Friends and colleagues:

I propose to draw three lessons from the work we are celebrating today: scientists can be a doggedly determined lot, their determination can pay off, and the pay off can include new problems that in turn attract dogged attention.

Consider that in 1917, 90 years ago, Einstein was led to modify his theory of gravity, general relativity, by adding the cosmological constant term to make the theory consistent with what he considered to be a philosophically reasonable universe, one that is static and spatially homogeneous. A decade later, the Belgian cosmologist George Lemaître saw that Einstein's universe might better fit what is observed if it were allowed to expand. A decade after that, the American astronomer Edwin P. Hubble was leading the campaign for a great new telescope – the 200-inch – for the purpose of testing the idea of an expanding universe. Yet another quarter of a century later, the Gruber cosmologist Allan R. Sandage published a paper on how one might best use the 200-inch telescope to test competing ideas about the nature of the expansion of the Universe. His choice was the redshift-magnitude relation.

A quarter of a century or so after that, Saul Perlmutter told me about his dream of using supernovae as the standard candle for an application of the redshift-magnitude relation. I hope I was polite. In my heart, my feeling was "Oh Saul,

this is just so difficult". I met Brian Schmidt when he and I attended a meeting at the Aspen Center for Physics in 1991. We enjoyed skiing together. By this time two teams were aiming to use supernovae in an application of the redshift-magnitude test, one headed by Perlmutter, the other one by Schmidt. At the meeting we heard discussions of preliminary results. I remembered hearing expressions of doubt: this is such a difficult measurement. But as I have said, scientists are a persistent lot: the two groups succeeded. Their convincing treatment of astronomy has yielded an application of the redshift-magnitude test that demonstrates the presence of Einstein's cosmological constant. Here is research project that took true persistence: it spanned three generations from Einstein's idea of a reasonable universe and Lemaître's modest proposal for improving it, to the completion of the test Sandage had advocated.

I come now to the third of the lessons: the pay-off for the solution of a problem can include new problems. Already in the 1930s, George Lemaître was aware that the cosmological constant of Einstein's reasonable universe has the property of a vacuum energy density. But the Austrian physicist Wolfgang E. Pauli clearly saw that a reasonable vacuum within quantum physics would be expected to have a mass density that is enormous compared to what would be allowed by general relativity theory. Until recently, we could fall back on Pauli's position: perhaps some symmetry of nature forces the vacuum energy density to assume the only reasonable and acceptable value: zero. But the modern cosmological tests, including the beautiful measurements by the teams headed by Saul Perlmutter and Brian Schmidt, have taken that comforting thought away from us. Their great contribution to the solution of the problem of testing cosmology has given us a new problem: discover how the curious value for the vacuum energy density fits fundamental physics. We make progress in science by successive approximations.

So I congratulate you and thank you for two things. Solving a problem for us and giving us a new one. You keep us doggedly working.

Thank you.

Words of thanks by Saul Perlmutter, UC Berkeley, CA, USA

Thank you.

It's a great honor for us to be invited here today for this Prize. And thank you Trinity College and the Institute of Astronomy for hosting us. There is a popular image of the lone scientist in a lab, but I think it's pretty clear here today that our experience is the exact opposite: science is – at least for us – an extremely social activity. Perhaps a very fast impressionistic sketch of scenes from the decade leading up to the discoveries will be the best way to capture this.

Brainstorming in Berkeley with Carlton R. Pennypacker (in 1987) as we first batted around hardware and software plans for a new high-redshift supernova project – and then the consequence: the mountaintop observatory cafeteria at Coonabarabran as Carl, I, and then-graduate student Heidi J. Newberg got to

know our pioneering Australia-based colleagues, Warrick Couch and Brian J. Boyle, installing and then using our weird crystal-ball of a wide-field corrector and camera at the AAT 4-m telescope – which led to our first high-redshift (but unconfirmed!) supernova. Back in Berkeley, I have an image of Gerson Goldhaber overlaying transparencies with negative and positive images of fields full of galaxies – image analysis for the days when the computers were down!

Australian rain, rain, rain – and then the sunny relief of . . . Cambridge!? – well, actually beautiful La Palma where our new Cambridge colleagues, Richard McMahon and Michael J. Irwin (and later Richard S. Ellis) studied the most distant quasars. Long nights debugging a new instrument for La Palma, and tense phone calls to the Isaac Newton telescope while the data was sent to Berkeley for analysis – and then our first 'official' high-redshift supernova.

By this time the Europeans had arrived full force in Berkeley: Ariel M. Goobar from Sweden kicked it off; developing new analyses with our then-graduate student Alex G. Kim, brainstorming with me about the cosmological measurements. A glimpse of Reynald Pain from France assessing the damage (and successes!) at the end of a complex telescope run – the first of the so-called "batch discoveries." This epoch ends in my mind with a celebratory party in the Berkeley hills, where we have a bottle of champagne for each of the half dozen supernovae discovered in a batch.

The sociology changes a little as we move to mass production, with new outposts at telescopes around the world, typically manned by a lone team member tenuously connected by a stream of email, phone, and fax. Pilar Ruiz-Lapuente and Nicholas A. Walton are at La Palma, Chris Lidman is the voice at the VLT in Chile, Bradley E. Schaefer at Kitt Peak. Larger expeditionary forces head to Cerra Tololo in Chile where all the supernova discoveries now are generated (I picture Donald E. Groom and Susana E. Deustua on one such trip), immediately followed by another team of us rushing with the new list of likely supernovae to the oxygen-poor mountaintop of the then-new Keck Telescope. (I have a memory video-clip of Alexei V. Filippenko – then on *our* team –, grad student Tom Mattheson, and our new Cambridge PhD Isobel M. Hook, all crowding round the computer screen as supernova after supernova proved itself. And at the control center in Berkeley the graduate students working round the clock: I picture Matthew Kim and – from France – Sebastian Fabbro in the cramped room full of students, postdocs, and computers.

I then imagine the calm of space as the *Hubble Space Telescope* quietly does its part of the job, but of course down on earth the same flurry of humans – here Andrew S. Fruchter and Nino Panagia – make it possible to use this robot effectively.

The last act begins with a view of the end-of-night clean up after the next collaboration party, but this time there are entire cases of bottles of champagne left un-drunk – we're lightweights – all labeled with the names of the now-scores of new supernovae to be analyzed. A fresh relief team of scientists is

now on the field at Berkeley: Robert A. Knop, who thinks, types – and programs – faster than I speak, Peter E. Nugent, juggling supernova theory and practice, and Gregory S. Aldering pulling together all the strains of the analysis … and the search.

A final push of analyses has all of our Berkeley-based pre-graduate school interns working nights and weekends (parallel computing at its finest): First Julia C. Lee, and then Patrícia G. Castro, Nelson J. Nunes, and Robert M. Quimby – all later to continue careers in the field – including here in Cambridge.

And we all fall gasping in a metaphorical heap with the surprising discovery about the Universe that you just heard about. . . . And that's just *our* science team!

None of this whirlwind of human choreography happens at all without the constant support of our families, our teachers and mentors, and our *non*-scientist staff. Our families are represented by several of you here today, and our non-science team members by Jeanne Miller from Berkeley. We all really appreciate your helping – and putting up with all this!

We all really want to thank the Grubers, the Foundation, and the distinguished Advisory Committee for today's team Prize – which can reflect and encourage this very human, very group-based activity of science.

Words of thanks by Brian P. Schmidt, Mount Stromlo Observatory, Australia

Well, Saul, I did not think it was humanly possible to get through an entire team in 2.5 minutes, and I congratulate you. I will admit that I am not going to try that. Because I guess that I just did not quite have the guts.

I am here today, not as Brian, but as the High-z Team. And so I think I would like the High-z Team just to stand up, so that you can see who you are listening to as I speak. I have never seen many of those people in suits. It's nice to see!

The High-z Team got its start, at least our name got its start, in 1995, when we discovered our first supernova and we had to come up with the name in a very quick order, so that we could put out an *IAU-Circular*. And so we came up with the *High-z Supernova Search*, which was probably a pretty poor start for the Team. But none the less, I think we have managed collectively, as a Team, to go places where none of us ever dreamed.

When I look at previous winners of the Gruber Prize, it is really beyond my understanding how I can be even considered to be in their company. But of course, it is not me who is being considered to be in their company, it is the High-z Team. And collectively, not to sound too boastful, we have achieved something very special, along with the *Supernova Cosmology Project,* in discovering an accelerating Universe.

There is a lesson here, because as science problems get harder and harder; individuals cannot solve the problems. It is only collectively that we are able to make progress. I still stand in awe that we are able to make this discovery, and

it is because, as a Team, we were able to solve really hard problems by working together. And of course, the competition between the two teams was instrumental to make it all happen. Many people in this room saw that unfold over the five or six years in the mid-1990s, and understand what I mean.

But it was not just perseverance and hard work, it also was a bit of luck: the Universe did not have to be accelerating. And it was also partly being born at the right time. Five billion years ago, the Universe was not accelerating, as Adam G. Riess and others in this room have shown. If the Earth was formed back then, then we would not be here today. But even twenty years ago the technology and techniques did not yet exist. It is only, to paraphrase words, I think, that were written close to this venue, "by standing on the shoulders of giants, that we have been able to see so far".

It is particularly special that we can be here at Trinity College. I want to thank Simon Mitton, and Lord Rees – sorry Martin, I have never been able to call anyone Lord before, it is quite a privilege – for hosting this event. I especially would like to thank Peter and Patricia Gruber, for your heart-felt generosity and personal time that goes into this Award. From our Team's hearts, this is the biggest thing that can ever happen to us, and we really thank you for making it happen.

Thank you all very much.

PPGF Cosmology Prize 2008

The PPGF Cosmology Prize 2008 will be awarded in fall 2008. Information on the annual PPGF Cosmology Prize is available at <http://www.iau.org/PETER_AND_PATRICIA_GRUBER_FOUN.98.0.html>.

PPGF Cosmology Prize 2009

The PPGF Cosmology Prize 2009 will be awarded during the Inaugural Ceremony of the IAU XXVIIth General Assembly in Rio de Janeiro, 3 August 2009. Nomination of candidates for the PPGF Cosmology Prize 2009 can be submitted up to 31 December 2008. Nomination information is available at: <http://www.gruberprizes.org/Nominations/Cosmology.php>.

8.2. PPGF Fellowship 2008

The deadline for application of the PPGF Fellowship 2008 is 1 March 2008. Instructions for application are available at the IAU web page: <http://www.iau.org/PETER_AND_PATRICIA_GRUBER_FOUN.98.0.html>

9. REPORTS OF IAU DIVISIONS, COMMISSIONS, WORKING GROUPS, AND PROGRAM GROUPS

9.1. Division I *on Fundamental Astronomy* *New SOFA Software Release*

SOFA (Standards of Fundamental Astronomy) is an IAU Service which operates under Division I and reports through Commission 19 (Rotation of the Earth). It has developed a library of Fortran subprograms which implement official IAU algorithms for fundamental-astronomy computations.

A new release of the software was made on 2007 August 13, bringing the total number of routines to 161, comprising 109 astronomy routines supported by 52 vector/matrix routines. The new release incorporates the new precession model that was adopted at the Prague IAU General Assembly in 2006, and includes a "cookbook" that introduces the SOFA routines associated with precession-nutation and Earth rotation. The SOFA home page is: <http://www.iau-sofa.rl.ac.uk/>. Further information on the new release can be obtained by following the links to "SOFA Product Index" then "2007-08-10".

Jan Vondrák, President, Astronomical Institute, Prague, Czech Republic
3 November 2007

9.2. Div. I/WG on *Numerical Standards of Fundamental Astronomy*

The IAU Working Group (WG) on Numerical Standards for Fundamental Astronomy has been tasked with updating the IAU Current Best Estimates (CBEs), conforming with the IAU Resolutions, IERS Conventions and Systeme International whenever possible. The WG started where the previous IAU WG tasked with providing CBEs left off, by using the existing IAU CBEs as the starting draft. In the latest draft version, six additional constants have been added to that list, one constant has been superseded by another, and the numerical values for ten additional constants have been replaced by more current values. In addition to updating the list of CBEs, the WG is beginning to address the larger issues surrounding the adoption of IAU CBEs. These include the procedure to document the theoretical context of the constants, the mechanism to keep the CBEs current, and whether the IAU should revise its current list of adopted constants to correspond with the new list of CBEs.

Brian J. Luzum, Chair, Washington DC, USA, 26 October 2007

9.3. Div. III/Comm. 15/WG on *Planetary System Nomenclature*

The WG-PSN is responsible for the process of planetary nomenclature, which is required to uniquely identify planets, satellites, and distinct features on their surfaces so that these can be easily located, described, and discussed.

The WG-PSN is supported by six tasks groups for the Moon, Mercury, Venus, Mars, Outer Solar System, and Small Bodies. Details on the nomenclature and the naming process can be obtained from the *Gazetteer of Planetary Nomenclature*: <http://planetarynames.wr.usgs.gov>.

At the IAU General Assembly in Prague in August 2006, the name approval process was refined such that final approval of names is possible also between IAU General Assemblies. In the new approval process names are considered approved immediately upon WG-PSN approval and will immediately be entered in the *Gazetteer of Planetary Nomenclature*. Should there be a protest against a name within a 3-months period, then the IAU will decide on the appropriateness of that name and the name may be dropped, if inappropriate.

Over the past year the WG-PSN continued its usual business through numerous email exchanges. A number of features and bodies were named on request of the scientific community. These include features on planets, satellites, and asteroids, as well as rings and moons of the outer planets. To simplify the name request process for the scientific community, the Name Request Form has been made available electronically on the *Gazetteer* web page. This also ensures that a data archive of name request can be maintained by the Working Group. A page with Frequently Asked Questions (FAQ) was also added to the *Gazetteer*.

A rule for the procedure of dropping names became necessary, which was defined as follows. Official approval by a Task Group and by the Working Group is required before a name can be dropped. Dropped names are retained in the database for reference; the code in the "approval status" field is changed to "6" indicating the name has been dropped, the name is shown in brackets in the "name" field, and a brief notation is made in the "origin" field explaining why the name was dropped and when it was dropped. In general, names that have been dropped should not be re-used for other features. Dropped names could be re-used in very exceptional cases; for instance, if no new names of a particular theme are available and there is strong justification, a dropped name could be considered for reuse.

Chairperson: Rita M. Schulz (the Netherlands). *Members:* Kaare Aksnes (Norway), Jennifer S. Blue (USA), Jürgen Blunck (Germany), Edward L.G. Bowell (USA), George A. Burba (Russian Federation), Régis Courtin (France), Rosaly M.C. Lopes (USA), Mikhail Ya. Marov (Russian Federation), Brian G. Marsden (USA), Mark Robinson (USA), Vladislav V. Shevchenko (Russian Federation) & Bradford A. Smith (USA).

Rita M. Schulz, chairperson of the Working Group
Noordwijk, the Netherlands, 5 November 2007

9.4. Div. III/Comm. 22/Task Group on *Meteor Shower Nomenclature*
Reporting and Naming of New Meteor Showers

Following the establishment of a "Task Group for Meteor Shower Nomenclature" at the 2006 IAU General Assembly in Prague, with the objective being to formulate a descriptive list of established meteor showers, and following the adoption of a "Working List of Meteor Showers" and a series of meteor- Shower nomenclature rules (cf. IAU Information Bulletin No. 99, January 2007), the chair of the Task Group, Peter Jenniskens of the SETI Institute, now reports that a process has been put in place to report new meteor showers by adding showers to the current IAU Meteor Shower Working List. Only discoveries of probable showers that follow in part from new data will be accepted. Details are given at a new website:
<http://www.astro.amu.edu.pl/~jopek/MDC2007/index.php> (soon to be copied to http://www.astro.sk/~ne/IAUMDC/), which was developed by Tadeusz J. Jopek of Poznan Observatory. Jopek will act as the point of contact for such new showers. The website contains the current Working List, as well as a List of Established Showers, with details on the physical characteristics of each shower (to be expanded in the future).

In collaboration with the IAU's Central Bureau for Astronomical Telegrams, a CBET will be issued periodically to indicate when new showers are added to the Working List. The goal of subsequent research is to establish the validity of the proposed shower and, if analysis confirms such validity, subsequently to move the stream from the Working List to the "List of Established Showers". Evidence that helps to establish a shower in the Working List (or to eliminate a shower from the list) should be published in the literature, and a copy of the paper should be provided to the Meteor Data Center (MDC). Upon review of the evidence in the Task Group, the MDC will move that stream from the Working List to the List of Established Showers. Each shower in the List of Established Showers will receive its official name (and official recognition as being established) upon recommendation by Commission 22 at the upcoming 2009 IAU General Assembly.

Petrus M.M. Jenniskens, chair, SETI Institute, Mountain View, CA, USA
26 September 2007

9.5. Div. III/Comm. 51 on *Bioastronomy*

The primary activity of IAU Commission 51 (C51) is to organize a Bioastronomy meeting every three years. Bioastronomy 2007 was held this year in San Juan, Puerto Rico, and was a great success, largely due to the efforts of William Irvine, chair of the Scientific Organizing Committee for the meeting and vice-president of C51, and to Karen Meech, chair of the Local Organizing Committee for the meeting and Past President of C51. The meeting's web pages are available at: <http://www.ifa.hawaii.edu/UHNAI/bioast07.htm>. For reference, the web page for C51 are located at:

<http://www.dtm.ciw.edu/boss/c51index.html>. While at the San Juan meeting, a group of C51 members met with Antonio Lazcano, President of the International Society for the Study of the Origin of Life, the International Astrobiology Society (also known as ISSOL), several ISSOL board members, and other interested bioastronomers and astrobiologists in order to discuss plans to hold a joint meeting in the future. The motivation for having such a joint meeting is to try to ensure the continued growth of our fields without putting undue pressure on ourselves by having competing meetings at different times and locations - there is considerable overlap between our interests, and a common meeting seems like a reasonable means to avoid having people being able to only attend one meeting or the other due to the constraints of time and money.

We decided to plan on holding a joint meeting of ISSOL and C51 in either 2010 (three years after Bioastronomy 2007) or 2011 (three years after the next ISSOL meeting in Florence, Italy in 2008). We anticipate having a truly joint meeting with a single, unified program of talks and events for a total of perhaps 500 participants. The date and venue for this meeting remain to be determined.

Antonio Lazcano and I invite expressions of interest from institutions that would be willing to host the first joint ISSOL/C51 meeting in either 2010 or 2011. Please send us (<alar@hp.fciencias.unam.mx> and <boss@dtm.ciw.edu>) your ideas for having such a joint meeting, and we will give them serious consideration.

Alan P. Boss, President, Carnegie Institution, Washington DC, USA, 5 October 2007

9.6. Div. IV-V/WG on *Ap and Related Stars*

In September 2007, more than 80 members of the community participated in the Workshop "CP#Ap Workshop" that took place in Vienna, Austria. Besides the excellent scientific outcome of the meeting, during the workshop the community had the opportunity to discuss its organization and plans for the future. Particular attention was given to the future organization of scientific meetings and coordination of scientific activities, the effective use of the forum provided by the ApN newsletter, and the active interaction with other scientific communities.

Following on the activities planned for the Working Group, in the past few months the community has also prepared a proposal for a 1.5-day Joint Discussion (JD) to take place during the IAU General Assembly, in Rio, 2009. The proposal was submitted to the IAU, in response to the call issued for Letters-of-Intent, with the deadline of 15 September 2007. The preliminary proposal, including the list of topics planned for the JD entitled "Progress in understanding the physics of Ap and related stars", can be retrieved at the ApN newsletter: <http://ams.astro.univie.ac.at/apn>. The structure and content of the proposal were vastly discussed among the members of the Working Group, both remotely and during the Vienna Workshop "CP#Ap Workshop".

Finally, also during the "CP#Ap Workshop" in Vienna, it has been suggested that a "Wish List", concerning atomic and related data needed by the community, should be collected and shared with Commission 14. The information that should be included in the "Wish List" is being discussed at the ApN newsletter forum. Please check the ongoing discussion and send us your own comments through the forum.

Margarida Cunha, Chair of the Working Group, Porto, Portugal, 31 October 2007

9.7. Div. VI/Comm. 34/WG on *Planetary Nebulae*

The WG had a business meeting at the last Asymmetrical planetary nebulae IV conference on La Palma (June 18th, 2007). The WG agreed to shorten the service term to 10 years (instead of the former 15) or two IAU planetary symposia. The WG agreed that the next IAU planetary nebulae symposium will take place in 2011 in Puerto de la Cruz (Tenerife, Spain).

Arturo T. Manchado, Chair, IAC, Tenerife, Spain, 23 October 2007

9.8. Div. IX/Comm. 25/WG on *Infrared Astronomy*

Members: Eugene F. Milone (chair) Andrew T. Young (vice-chair), Roger A. Bell, Michael Bessell, Martin Cohen, Robert Garrison, Ian S. Glass, John Graham, Lynn Hillenbrand, Robert L. Kurucz, Matthew Mountain, George Riecke, Stephen J. Schiller, Douglas Simons, Michael Skrutskie, C. Russell Stagg, Christiaan L. Sterken, Roger I. Thompson, Alan Tokunaga, Kevin Volk, et al.

Introduction

As noted in the triennial report, the IRWG was created following a Joint Commission Meeting at the Baltimore GA in 1988, a meeting that provided both diagnosis and prescription for the perceived ailments of infrared photometry. (In fact these problems are present today for reasons we describe below). At the core of the problem is the failure to systematically achieve the milli-magnitude precision expected of infrared photometry and an apparent 3% limit on system transformability. The proposed solution was to redefine the broadband Johnson system, the passbands of which had proven so unsatisfactory that over time effectively different systems proliferated although bearing the same JHKLMNQ designations. The new system needed to be better positioned and centered in the atmospheric windows of the Earth's atmosphere, and the variable water vapour content of the atmosphere needed to be measured in real time to better correct for atmospheric extinction. The recommendations were summarized by Milone (1989). The IRWG was formalized by Ian McLean, then president of Commission 25, at the Buenos Aires GA in 1991, and Milone formally appointed to the chair. Preliminary recommendations were presented by Young et al. (1993). The full details of the criteria and results of the numerical simulations can be found in Young et al. (1994). As described in IRWG and Commission 25 reports, a newer MODTRAN version (3.7) was used to check and extend previous work. The improved passband design proved so successful in minimizing the effects of

water vapour on the source flux transmitted through the passband that the second stage, real-time monitoring of IR extinction, was not pursued, although this procedure remains desirable for unoptimized passbands designed for specific astrophysical purposes. Milone & Young (1995) demonstrated the effectiveness of these passbands with filters produced by Custom Scientific of Phoenix, Arizona.

Developments since the Triennium report

As a result of these actions, the proliferation of IR broadband systems has diminished, but progress has been impeded for three main reasons:

a. inertia on the part of observatories in preferring to retain older filters;
b. the promotion of an ersatz system (Tokunaga et al. 1992) that marginally satisfies the requirements of a good passband system for the Mauna Kea environment but not elsewhere, according to our simulations, despite claims to the contrary (Tokunaga & Vacca 2007); and
c. skyrocketing costs of IR filters (by a factor of 5 for the iK filter from 2003 to 2006). As a consequence, unoptimized passbands are still in use at nearly all infrared photometry sites. The situation was described (and decried!) by Milone & Young (2007).

During 2007, the WG concentrated on informing the professional and the growing amateur IR community of the value of the IRWG passband set, especially the near-infrared portion of the IRWG set (namely iz, iJ, iH, iK) in Milone & Young (2007) and in Milone & Young (2008). A presentation was made to the Astronomy Roundup 2007 in Calgary, sponsored by the American Association of Variable Star Observers (AAVSO), the Royal Astronomical Society of Canada (RASC), and the Association of Lunar and Planetary Observers (ALPO). The AAVSO is encouraging its members who wish to observe in the infrared to make use of a Hammamatsu detector that is bundled with the Mauna Kea J and H filters, which, however, we have found to be far less optimum for lower elevation sites than the iz, iJ and iH passbands of the IRWG set.

It would be good to see the IRWG system used in specific programs so that the superior signal to noise and transformation capabilities can be exploited. However, with its superior S/N and transformation characteristics, there is no ground-based broadband IR photometry program that cannot benefit from it.

We note again that the need for improved IR passbands has been accepted by the community, by and large. Salas et al (2006) made use of Padé approximants to simulate atmospheric extinction as they defined a new set of intermediate IR passbands. In the near infrared, Simons & Tokunaga (2002), Tokunaga et al. (2002), and Tokunaga & Vacca (2007) typify the new attitude, but vigorous support for the Mauna Kea system and promotion of a mass-buy of the Mauna Kea filters, have arguably if unintentionally impeded further progress regarding the adoption of an optimum and universally applicable IR passband system.

Of course we have no argument against the use of the Mauna Kea system for the highest and driest sites when throughput (but not S/N) is the only consideration. The most important aspect of the IRWG's work is the promise that the near-IR IRWG passband set holds for highly precise photometry at intermediate and even low elevation sites, but even at Mauna Kea itself, our simulations have indicated that most of the IRWG passbands would provide better S/N with less water vapour sensitivity. The evidence is presented in Milone & Young (2005) and in Milone & Young (2007).

Closing remarks

Future programs require fabrication and field testing of the remainder of the IRWG passband set, namely the passbands iL, iL',iM, iN, in, and iQ. It is also desirable to extend the list of near infrared standard stars presented in Milone & Young (2005) to a fuller all-season set, and to extend them to fainter stars, as, for example, Landolt (1992) (and in earlier papers cited therein) has done for the visual Johnson-Cousins passbands. Finally, the passbands should be used for programs such as variable star photometry. Before any of this can happen, the IRWG filters need to be affordable; at present only a large demand for these filters will accomplish this. Therefore, we urge IR observers to request their filter suppliers to consider fabrication of these filters, and to encourage their observatories to stock them for the hopefully increasing numbers of observers who desire passbands with less sensitivity to water vapour variation and improved transformation capability.

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Eugene Milone, chair, University of Calgary, Canada, 2 December 2007

9.9. Div. IX/Comm. 54 on *Optical and Infrared Interferometry*

The pace of publications of science papers with optical/infrared interferometers is increasing rapidly thanks to recent large and efficient facilities open to both visitor and service mode observations. Impressive breakthroughs have been made these past years both in stellar physics and extragalactic science. For example, (proto-) planetary disks are under close scrutiny and important ingredients to form rocky planets and their life-friendly environments are being characterized (crystalline dust, water …). More is to be expected on this with astrometric searches for exoplanets with interferometers. Fantastic results have shown evidence of oblate, fast-rotating stars whose surface brightness is greatly modified by gravity effects. A first image of such a star, Altair, was recently produced and made the effect still more obvious. Going further out of our neighborhood, interferometry has observed the cores of Active Galactic Nuclei and disclosed compact dusty environments on parsec scales around the central engine, a corner stone of the unified scheme for these objects.

In order to coordinate international collaborations on scientific and technical matters relating to long-baseline optical and infrared interferometry, the Commission on *Optical and Infrared Interferometry* has been established at the last IAU General Assembly held in Prague in August 2006. The Commission continues the work begun through the Working Group on Optical/IR Interferometry. As a Commission within Division IX, its focus is to establish scientific and technical standards that facilitate the future growth of the field.

The work of the Commission takes place primarily within the Commission's Working Groups. Current Working Groups are:

- Interferometry Data Format,
- Imaging Algorithms,
- Calibrator Stars,
- Advances in Astronomy with Interferometry,
- Vademecum of Interferometry.

The first two Working Groups were created prior to the Commission. The Interferometry Data Format Working Group has established the Optical Interferometry Data Exchange format (published in 2005) and its supporting software. Some work remains to be done in order to update this format in consistence with the needs of future instruments and software. The Imaging Algorithms Working Group expands the original aim of optical/IR interferometry imaging contests (held in June 2004 and May 2006) towards the goal of developing and disseminating these software in the community. The activity of other Working Groups is just starting.

More Working Groups may be created, including:

- Future Large Arrays,
- Intensity Interferometry.

The Commission promotes the science of interferometry through collaborations with other IAU Commissions, in particular with Commissions 8 on *Astrometry*, 26 on *Double and Multiple Stars*, *27 on Variable Stars* (C27), and 36 on *Theory of Stellar Atmospheres*.

The Commission website <http://olbin.jpl.nasa.gov/iau/index.html> is hosted at the Optical Long Baseline Interferometry News (OLBIN). This website and its associated Email Forum exist to further the interests of the optical interferometry community and goals of Commission 54.

Members of IAU interested in this field are warmly invited to join Commission 54. Requests should be sent to <guy.perrin@obspm.fr>.

Guy Perrin, President, Stephen T. Ridgway, Vice-President, Gerard T. van Belle, Secretary, Peter R. Lawson, Chairman of former Working Group on Optical/Infrared Interferometry 3 November 2007

9.10. Div. X-XI/WG on *Encouraging the International Development of Antarctic Astronomy*

The European Union ARENA network (Antarctic Research European Network Astronomy) continues to develop plans within Europe for the utilisation of the Antarctic plateau for astronomical observations. In 2007 workshops have been held on "telescopes and instrument robotization at Dome C" (Tenerife, Spain, March), on "site testing at Dome C" (Rome, Italy, June) and on "sub-millimetre astronomy at Dome C" (Saclay, France, June). The annual conference of the consortium was held in Potsdam in September on the theme of "the astrophysical science cases at Dome C", to which a wide range of international speakers presented. The third (and final) conference will be in Venice, Italy in September 2008, and further information can be found at <arena.unice.fr>.

The Chinese PANDA traverse is scheduled to deploy site testing equipment to Dome A, the highest point of the Antarctic plateau, in 2008 as part of the International Polar Year. On board will also be astronomical instrumentation developed in Australia and the USA. Japanese astronomers have also started to investigate the site qualities of Dome F on the Antarctic plateau.

Michael G. Burton, chair, UNSW, Australia, 8 October 2007

9.11. Div. XI/Working Group on *Particle Astrophysics*

The Organizing Committee of Division XI has decided to dissolve the Working Group for Particle Astrophysics because unfortunately the interest of its members waned significantly in recent years so that a regular meeting schedule could not be maintained. We thank the WG Chair Prof. Reinhard Schlickeiser and the previous Chair, Prof. Marco Salvati for their efforts.

Günther Hasinger, President of the Division, 1 Novmber 2007

9.12. Div. XII/Comm. 50 on *Protection of Existing and Potential Observatory Sites*

The Starlight 2007 Conference was held in April 2007 on La Palma in the Canary Islands. The Conference was well attended by astronomers and others interested in reducing light pollution. The *Declaration in Defence of the Night Sky and the Right to Starlight* from the Conference has attracted wide attention. The full text of the declaration as well as proceedings from the meeting can be found at <http://www.unescocan.org/starlight/starlighteng.htm>.

Another result of the meeting is renewed interest in protecting astronomy sites by UNESCO, and exploration of the possibility of protecting astronomical sites by having them listed on the World Heritage List. Two types of sites are under discussion -historical sites (Commission 41), and the very best astronomical sites on the Earth (Commission 50). The growing threat from light pollution and radio interference is at the forefront of these discussions.

A meeting held in Quebec in September 2007 highlighted the heroic efforts made around the Mont Megantic Observatory (Canada) to restore the dark sky there. From the summit, the closest bright (unshielded) light visible is actually at the US/Canada border (on the US side). As the radius of the retrofitting of lights expands, progress is slowing because more and larger towns are encountered that have many more lights.

A light pollution meeting was also held in Bled in Slovenia in October 2007 and was well attended. Slovenia is among the first European nations to have a national light pollution law.

Illumination of the border fence between the United States and Mexico has been proposed. This poses a major threat to the Arizona observatories. Billboards using LED lights are a new and potentially serious problem.

A Working Group led by Connie Walker at NOAO is preparing dark sky initiatives and activities for the 2009 International Year of Astronomy.

The World Radio Communication Conference 2007 is being held in Geneva in October and November 2007. The International Telecommunications Union has proposed regulating frequencies extending all the way to optical wavelengths. Space-to-ground communications in the near-infrared would have a tremendous impact on ground-based astronomy. A report from this meeting will be included in IAU IB 102.

Richard J. Wainscoat, President of the Commission
Honolulu, HI, USA, 2 November 2007

10. IAU EDUCATIONAL ACTIVITIES

10.1. Div. XII/Comm. 46/PG on *International Schools for Young Astronomers (ISYAs)*

ISYA seeks the participation of young astronomers mainly, but not exclusively, from astronomically developing countries. Participants should generally have finished first degree studies.

ISYA seeks to broaden the participants perspective on astronomy by lectures from an international faculty on selected topics of astronomy, seminars, practical exercises and observations, and exchange of experiences.

30th ISYA, 1-22 July 2008, Antalya, Turkey

Contact

Prof. J.-P. De Greve, Chair PG-ISYA, <jpdgreve@vub.ac.be>
URL: <http://isya2008.tug.tubitak.gov.tr>

Organizers

TÜBİTAK National Observatory, the Turkish Astronomical Society, and the International Astronomical Union.

Objectives

1. To enhance some of the astronomical activities currently being carried out in Turkey as well as in East Europe and Middle East countries.
2. To encourage the future development of cooperative researches in various countries in the region.
3. To provide opportunity for participants to have informal discussions with recognized experts in the selected fields of research for an extended period of 3 weeks.

Venue

TUBITAK National Observatory (TUG), Akdeniz University Campus, TR-07058 Antalya, – Turkey.

Antalya is Turkey's principal resort with archaeological sites and natural beauties, surrounded by amazing scenery of sharp contrasts. Its famous Archeological Museum, with artifacts from the Paleolithic age to Ottoman times, offers a glimpse of the area's rich history.

Language

The language of the school will be English.

Course structure

Among the topics to be covered are:

- structure and evolution of stars with application to binary stars
- novae
- extrasolar planets and life
- stellar spectroscopy and data analysis

- spectroscopy of binaries
- *Hubble Space Telescope* science
- data analysis with IRAF
- endpoints of stellar evolution
- neutron stars
- CCD astrometry
- research with small telescopes
- a course on how to give a talk and how to write a paper.

Faculty members

- Ali Alpar, Sabancı University, Turkey <alpar@sabanciuniv.edu>
- Antonio Frasca, Osservatorio Astrofisico di Catania, Italy <afr@ct.astro.it>
- Edward F. Guinan, Villanova University, PA, USA <edward.guinan@villanova.edu>
- Jean-Pierre De Greve, Free University Brussels, Belgium, Chair PG-ISYA <jpdgreve@vub.ac.be>
- Kam-Ching Leung, University of Nebraska, USA, vice-Chair PG-ISYA <kleung@unlserve.unl.edu>
- Robert Williams, Space Telescope Science Institute, Baltimore, MD, USA <wms@stsci.edu>
- Sinan Kaan Yerli, Middle East Technical University, Turkey <sinan@sinan.physics.metu.edu.tr>
- Zeki Aslan, TUBITAK National Observatory, Turkey, Chair LOC <aslant@tug.tug.tubitak.gov.tr>

Financial support

Accommodation for all participants will be provided by the TÜBİTAK National Observatory. Travel grants for participants are also available. Those interested are encouraged to apply. They should mention an estimate of the cost for a round trip to Antalya, Turkey, at the cheapest fare available at the time of travel.

Application

The school will accept a limited number of qualified students mostly from East European and Middle East countries. The participants are expected to be graduate students holding a Master degree (or equivalent) in science, astronomy, or related fields. Applicants should mention the achieved level of studies in physics and astronomy and any topic of special interest. Two letters of recommendation are required. Applications and letters of reference should arrive by February 10th, 2008. The application form can be downloaded from the School's website and has to be sent by e-mail or fax to both of the addresses below:

Prof. Jean-Pierre De Greve, Chair
IAU Commission 46 PG-ISYA
Department of Physics
Vrije Universiteit Brussel
Pleinlaan 2, BE-1050 Brussels
Phone +32 2 629 13 11
Fax +32 2 629 36 14
Email <jpdgreve@vub.ac.be>Email

Prof. Zeki Eker, Director
TUBITAK National
Observatory
Akdeniz Universitesi Yerleskesi
TR-07058 Antalya
Turkey
Phone +90 242 227 84 01
Fax +90 242 227 84 00
Email eker@tug.tug.tubitak.gov.tr

10.2. Div. XII/Comm. 46/PG on *Teaching for Astronomy Development*

The primary goal of IAU Div.XII/Commission 46 Program Group *Teaching for Astronomy Development* (TAD) is to aid in "the enhancement of the country's astronomy education and astronomical research in support of education". The TAD program continues to vigorous support the development of astronomy education, teaching and research in several countries. During 2007, TAD programs have been supported and carried out in Central America (Nicaragua), Kenya, Mongolia, Morocco, the Philippines and Vietnam. Additional TAD programs are being discussed or planned for Kazakhstan, Nepal and North Korea, as well as in the Caribbean. Brief summaries of the TAD supported and sponsored programs during 2007 or planned and proposed for 2008 are discussed below.

Central American astronomers' meeting, June 25-30, 2007

TAD provided support for the 11th Curso Centroamericano de Astronomía y Astrofísica (CURCAA) at the Universidad Nacional Autónoma de Nicaragua (UNAN) in Managua, Nicaragua. The conference, the 11th of a series of annual meetings held by an informal group of Central American astronomers and physicists to further the study of astronomy in Central America. TAD co-Chair Larry Marschall attended as a representative of TAD, and Silvia Torres attended as representative of the IAU. The meeting was organized by Maria Cristina Pineda de Carias of UNAH, Honduras, and the head of the local organizing committee was Javier Pichardo, UNAN, Managua. The stated purpose of the meeting was threefold:

1. to foster the development of astronomy in classrooms at primary, secondary, and university levels in Central America, and to help in the development of small observatories in teaching and research;
2. to explore ways in which Central American astronomers can further the efforts of the International Year of Astronomy in 2009; and
3. to organize the academic astronomers of Central America to rejoin the IAU.

A dozen astronomers attended the meeting, including representatives of all the Central American countries and invited speakers from Mexico, Chile, and Spain. There were about two dozen astronomy students, as well as over 200 teachers

and other interested amateurs and students. The meeting included a number of useful workshops on teaching methods, observations with small observatories, and modern astrophysical research. There was also a business meeting of the Central American astronomers to plan for further engagement with the IAU and to discuss activities for the upcoming *International Year of Astronomy 2009*. A new observatory at the UNAN, the first public university observatory in Nicaragua, also was dedicated. The meeting was exceptionally well organized, it effectively reached a wide audience with interest in astronomy at all levels, and it served to energize astronomers in Nicaragua and strengthen collaboration between academic astronomers in all the attending Central American countries. A detailed report is available from the co-Chairs of PG-TAD.

PG-TAD programs in Morocco

Visit of Ghassan Yassin (Oxford University) to Al Akhawayn University, April 2007

Hassane Darhmaoui, Associate Professor, School of Science & Engineering, Al Akhawayn University in Ifrane Morocco, has requested and received TAD support for a visit to Ifran by Ghassan Yassin of Oxford University. Ghassan Yassin is working with the Cosmology Group in Oxford. During the summer of 2006, he supervised the capstone project and internship of Moroccan student Hassan Bourhrous. Ghassan Yassin visited Morocco to meet with students and faculty and to discuss opportunities for additional Moroccan students to study at Oxford and work with him and the Oxford Cosmology Group. Ghassan Yassin visited Morocco during 8-13 April 2007 and presented three lectures on cosmology. One of these lectures was given to high school students. In a follow-up program, TAD agreed to partially cover the travel cost of a Moroccan graduate student to Oxford University to receive advanced training and to take courses.

PG-TAD sponsorship of high school teachers from the Lycée technique de Casablanca to attend a CLEA Summer School in France, August 2007

In a pilot program TAD supported the travel and local expenses of two high school teachers from Morocco to attend a special science education program in France, 17-24 August 2007. Michèle Gerbaldi (IAP, France) and Khalil Chamcham (Astrophysics Sub-Department, University of Oxford) organized this interesting education experience, in which the visiting Moroccan high school teachers participated in this bilateral program between Moroccan Science teachers and their French speaking European colleagues with the aim to stimulate the Moroccan teachers to be creative teachers and to develop a scientific culture within their respective schools. The two participants in this innovative education program were Abdelaziz Bourim and Smail Naasse, physics teachers at the Lycee Technique de Casablanca (Morocco). This summer school is organized annually by the CLEA (France) <www.ac-nice.fr/clea/>. CLEA is the acronym of Comité de Liaison Enseignants et Astronomes and is a French non-profit association between professional astronomers and school teachers. These Summer Schools are organized for school teachers; the instructors are professional astronomers and school

teachers, who have extended skills in teaching astronomy at the secondary and high school levels. Michèle Gerbaldi reports that this was a great experience for the two teachers. Contacts for this program: Khalil Chamcham, Astrophysics Sub-Department, University of Oxford chamcham@astro.ox.ac.uk & Michèle Gerbaldi, IAP, Paris <gerbaldi@iap.fr>.

PG-TAD Support Dr. Darhmaoui of Al Akhawayn University to participate in the Global Hands-On the Universe 2007 Conference in Japan, July 2007

TAD also supported travel expenses of Dr. Hassane Darhmaoui of Al Akhawayn University to attend the Global Hands-on Universe 2007 Conference (GHOU 2007) held during July 2007 in Tokyo, Japan. Hassane Darhmaoui presented a paper at the GHOU 2007 on Astronomy Education programs being developed in Morocco for grade school and high school students. This was a unique opportunity for him to learn more about numerous innovative projects in astronomy education worldwide that will help vitalize the Moroccan astronomy and science education programs. His attendance helped him establish links with various participants and be involved in new education projects. Hassane Darhmaoui provided the PG-TAD with a power-point copy of his presentation as well as a report on what he gained by attending the GHOU 2007 meeting.

Kenya/South Africa astronomer training and education program 2006-2007

In partnership with the IAU Div. XII/Comm. 46/PG Exchange of Astronomers, PG-TAD has co-sponsored the visit to South Africa of Paul Baki of Kenya to learn first hand astronomical instruments, data acquisition and reduction techniques. The plan is for Paul Baki to return to Kenya and transfer his training and experience to his students and colleagues.

Trinidad and Tobago & Caribbean Region Outreach & Education Program 2007-2008

PG-TAD program continues to enthusiastically encourage and support this project to develop a television-based Astronomy and Science Education and Public Outreach program for Trinidad & Tobago and the surrounding Caribbean region. Shirin Haque (University of the West Indies, St. Augustine Campus, Trinidad) has started the project. This program is expected to reach over nearly one million prospective viewers in the Caribbean region. Contact: Shirin Haque, <shirin@tstt.net.tt>.

PG-TAD programs in Vietnam in 2007

The Hanoi Astrophysics School, August 2007

PG-TAD supported the Hanoi Astrophysics School that took place during 21-26 August 2007. The School was hosted by the Hanoi National University of Education (HNUE). The school was proposed and organized by Nguyen Quynh Lan (Physics Department of HNUE) and sponsored by the Department of Physics at HNUE, Hanoi National University, and the Vietnamese

Astronomical Society. About 45 people attended the school, an intensive course of study, featuring four primary lecturers who delivered 90-minute talks in English each day. Students and some physics faculty attended. The participating students came from a wide variety of backgrounds and academic levels that included doctoral and MSc candidates in physics as well as undergraduates and a few high school students. The students were challenged on astrophysics as well as linguistics. The lecturers included Pierre Darriulat (Inst. des Sciences Techniques Nucléaire, Vietnam; World Laboratory), former Director of CERN, who presented lectures on general relativity, cosmology and cosmic rays. Michèle Gerbaldi (Institut d'Astrophysique in Paris, France; former Chair of IAU Div. XII/Comm. 46/PG-ISYA) lectured on stellar atmospheres and analyzing spectroscopy. Ed Guinan (Villanova University, USA, PG-TAD co-Chair) presented lectures on binary stars, extrasolar planets and habitability of planets, while John Hearnshaw (University of Canterbury, New Zealand, IAU Div. XII/Comm. 46/PG-WWDA Chair), lectured on stellar spectroscopy, gravitational microlenses, stellar age determinations, as well as other current astrophysical topics. The students benefited greatly from the program and it stimulated their interest to learn more about astronomy, astrophysics and cosmology. Many of the students were exposed to advanced astrophysics for the first time and they absorbed much interesting new material, and their ability to listen to talks in English and to communicate in English markedly improved by the end of the week.

While in Hanoi, IAU representatives met with Professor Nguyen Viet Thinh, the President of Hanoi National University of Education, and other university officials, including the Dean of the Physics Faculty, Pham Xuan Que, to discuss the future astronomy education and research programs in Vietnam. It is hoped that the stimulus of the Astrophysics School will encourage the small astronomical community in Vietnam's universities to apply for IAU membership in the near future.

PG-TAD is very grateful for all of the work that Dr. Nguyen Quynh Lan <nquynhlan@hnue.edu.vn> did in planning and organizing the School, leading to its great success.

PG-TAD visiting astronomer program in Vietnam

Joel Weisberg (Carleton College, North Field, MN, USA), of binary pulsar fame, visited Vietnam in June/July 2007 and graciously volunteered some of his time to serve for the PG-TAD program to meet with Vietnamese astronomers and students while in Ho Chi Minh City and Hanoi. PG-TAD provided nominal funds for incidental costs connected with his efforts. The PG-TAD program hopes to support additional visits of astronomers to Vietnam during 2008 to assist in developing Vietnam's growing astronomy teaching and research programs.

PG-TAD programs in Mongolia

PG-TAD Summer 2007 Astronomy Course in Ulaanbaatar, Mongolia

Under the auspices of TAD, Katrien Kolenberg (Vienna, Austria), visited Mongolia during May 2007. Katrien Kolenberg <katrien.kolenberg@gmail.com> has been to Mongolia during 2006 and was invited to visit the National University of Mongolia (NUM) in Ulaanbaatar during May/June 2007, to teach a special course on observations and theory of pulsating stars. This course was very successful and attended by some 40-50 undergraduate and graduate students, faculty and staff members. Many of the attendees asked to have astronomy and astrophysics courses added to the physics curriculum and in 2008 this will happen. While in Ulaanbaatar, Katrien Kolenberg also had meetings with the university officials and the observatory Directors and staff. The observatory is affiliated with the Mongolian Academy of Sciences. She discussed plans about organizing a summer school during July 2008. The proposed school will be held after the Mongolian Naadam Festival and before the solar eclipse, which will be visible in its totality from western Mongolia. See: <www.univie.ac.at/tops/blazhko>.

A possible PG-TAD sponsored astronomy Summer School in Mongolia – July/Aug. 2008

Plans for an Astronomy Summer School at the Normal University of Mongolia (NUM) are being led by Tsolmon Renchin, Director of the Remote Sensing Institute at NUM. The School will tentatively take place during July 2008 and planning and organization are currently underway. The PG-TAD program has given conditional support for this School. Kolenberg, Guinan and Marschall are advising in the development of the program for the School. An preliminary program should be available early in 2008. Contacts: Tsolmon Renchin <tsolmon@num.edu.mn> & Katrien Kolenberg <katrien.kolenberg@gmail.com>.

Training and education visit of a Mongolian astronomer

As part of the PG-TAD program in Mongolia, an invitation has been extended to Jargal Batsukh of the National University of Mongolia, to visit the US during 2008 (for about two weeks) to observe astronomy and astrophysics classes at Gettysburg and Villanova Universities. He will also learn how to implement CLEA laboratory activities in astronomy classes in Mongolia, have an opportunity to use modern CCD cameras at the Gettysburg and Villanova Observatories, and possibly visit other astronomical sites in the area (such as Green Bank and STScI). While at Villanova, Jargal Batsukh will be introduced to the reduction and analyses of samples of NASA X-ray and ultraviolet data.

Kazakhstan: initial PG-TAD program planned for 2008

Kam-Ching Leung, vice-Chair of the IAU Div. XII/Comm. 46/PG-ISYA Program, and Young-Woon Kang (Korea) visited Uzbekistan and Kazakhstan during the summer of 2007 on a fact finding trip mainly for the PG-ISYA program. While in Almaty, Kazakhstan, Leung and Kang met with the Directors of Fesenkov Astrophysical Institute, Emmanuil Vilkoviskij

<vilk@aphi.kz> and Leonid Chechin, and discussed the possibility of help from the IAU to improve astronomy research and education in Kazakhstan. Leung and Kang recommended an initial TAD program, to be followed in a few years by a possible IAU ISYA. It was suggested that a TAD program would include the introduction of 2-3 special and general short courses on astronomy and astrophysics to be held at the Physics-Mathematics faculty and students at the local State Al-Farabi University and/or at the State Abaj University. The suggested short courses could include "Introduction to modern cosmology", "Physics of AGNs", and "Dynamical Processes in the Universe". As a result of that visit, Emmanuil Vilkoviskij has been in contact with the TAD program Chairs and discussions are underway to arrange support for an initial visit to visit to Kazakhstan by a qualified astronomer during 2008. Kam-Ching Leung continues to provide advice to the TAD program for Kazakhstan and we are grateful for his help.

PG-TAD programs in the Philippines

The PG-TAD program is supporting the travel of astronomers between Gunma Astronomical Observatory (GAO) in Japan and the visiting staff of PAGASA (The Philippine Atmospheric, Geophysical, and Astronomical Administration) to give Philippine scientists experience in astronomical research and to attend lectures. Travel expenses of Dario dela Cruz of the Astronomy Research and Development Section (AsRDS), PAGASA, is supported by the TAD program in connection with his "On-the-Job Training on Astronomical Research and Outreach Activities", that will be held at Gunma Astronomical Observatory (GAO) of Japan from 16 January to 16 March 2008. Japan and GAO generously provide the training for foreign students as well as providing housing and sustenance during their visits to Japan. Japan has also donated a GOTO 45-cm telescope to the Philippines several years ago.

PG-TAD has also endorsed the possible visit of the Hakim Malasan from Indonesia to give an intensive 5-day tutorial on all aspects of modern CCD photometry to the PAGASA staff astronomers and students. Contact: Cynthia Celebre, chief, Astronomy Research and Development Section (AsRDS), PAGASA <cynthia_celebre@hotmail.com>.

PG-TAD support for an International School at Kathmandu, Nepal, March-April 2008

PG-TAD has agreed to provide limited financial and logistical support for the first International School in Astronomy-Astrophysics (ISAA), planned for March/April 2008 in Katmandu, Nepal. Michèle Gerbaldi (IAP, France), past Chair of Div. XII/Comm. 46/PG-ISYA) is the scientific advisor and resource person to the School. She was invited by a former Nepalese ISYA-participant (Thailand, ISYA-2001), Sanat Kumar Sharma, who is now the Co-Executive Director of the B.P. Koirala Memorial Planetarium, Observatory & Science Museum Development Board (Kathmandu). Michèle Gerbaldi has been helping in the organization of this School and is at the same time a consulting member of PG-TAD. This is the 6th School as such organized in Nepal, but for the first

time it is open to the participants of the neighboring countries. This School is organized as a preliminary event to the *International Year of Astronomy 2009*, as well as in conjunction with the opening of the Nepalese National Observatory. Catherine J. Cezarsky, President of the IAU, plans to attend the official opening of the Observatory and School <www.planeta-observatory.gov.np>. Foreseen are 30 participants: 20 from Nepal and 10 from abroad. The school also aims to bring forth new results, to allow young scientists to interact with experts in the field. Such interaction will also motivate aspiring students to venture out on research in astronomy. Organization of this School should also produce positive impact in the public mind about the scope of astronomy. PG-TAD has agreed to cover in part the travel expenses of the international students and lecturers. The bulk of the funding is from Nepal. Contacts: Sanat Kumar Sharma <sanatsharma@most.gov.np> and Michèle Gerbaldi <gerbaldi@iap.fr>.

PG-TAD contacts with the Democratic People's Republic of Korea

While attending the 29th ISYA in Malaysia, March 2007, discussions were held with the Democratic People's Republic of Korea (DPRK) Embassy Science Counselor Dr. Ri Jin Yong in Kuala Lumpur. Michèle Gerbaldi had established contacts with Dr. Yong and he was very helpful in arranging for three graduate students from North Korea to attend and participate in the ISYA-2007 in Malaysia. While in Malaysia, Michèle Gerbaldi and Ed Guinan met with Dr. Ri Jin Yong to discuss the support that the IAU could provide for North Korean astronomy development. The DPRK students from Pyongyang Astronomical Observatory (PAO) who attended the Malaysia ISYA-2007 requested technical astronomy books. In the meantime, most of these have already been sent from Paris and have been received in Pyongyang. In addition, the IAU Secretariat in Paris has kindly agreed to send spare copies of Proceedings of IAU Symposia and other available books to PAO, and has agreed to add PAO to the list of libraries receiving complimentary publications from the IAU. PG-TAD program is recommending support for two or three astronomers from POA to attend the *8th Pacific Rim Conference on Stellar Astrophysics* (PRCSA-2008) to be held in Phuket, Thailand, 5-9 May 2008.

Edward F. Guinan and Laurence A. Marschall (USA), co-Chairs, 29 November, 2007

10.3. COSPAR Capacity Building Workshop, co-sponsored by IAU

8th Regional Workshop on Space Astrophysics with the Swift, Chandra, and XMM/Newton Missions - A High-Energy Data Processing Workshop for Young Physicists and Astronomers from North Africa and the Middle East

19 January-1 February 2008, Alexandria, Egypt

Contact: Alaa Ibrahim <alaa@gwu.edu>

URL: <http://cais.cu.edu.eg/astro>.

11. IAU MEMBERSHIP

11.1. DECEASED MEMBERS

The Union is saddened to learn that the following members and former members passed away, as far as reported to the IAU Secretariat:

Ralph Asher **ALPHER** (1921-2007), USA, 12 August 2007
Luiz Muniz **BARRETO** (1925-2006), Brazil
Ronald N. **BRACEWELL** (1921-2007), USA, 12 August 2007
Sayd J. **CODINA LADANBERRY** (1926-2006), Brazil, 22 September 2006
Luc **DELBOUILLE** (19..-2006) Belgium, 7 September, 2006
Howard A. **GARCIA** (1929-2005), USA, July 25, 2005
Kenneth I. **GREISEN** (1918-2007), USA, 17 March 2007
E. Dorrit **HOFFLEIT** (1907-2007), USA, 9 April 2007
Syuzo **ISOBE** (19..-2006), Japan, 31 December 2006
Zdenka I. **KADLA** (1920-2006), Russian Federation, 15 August 2006
Miloslav **KOPECKY** (1928-2006, Czech Republic, 4 November 2006
Ladislav **KRIVSKY** (1925-2007), Czech Republic, 24 April 2007
Donald A. **MACRAE** (1916-2006), Canada, 6 December 2006
Bernard E.J. **PAGEL** (1930-2007), UK, 13 July 2007
Mario **PERINOTTO** (19..-2007), Italy, 15 August 2007
Waltraut C. **SEITTER** (19..-2007), Germany, 15 November 2007
Jovan **SIMOVLJEVIC** (19..-2007), Serbia, 19 October 2007
Mikhail A. **SMIRNOV** (1954-2006), Russian Federation, 28 August, 2006
Harding E. ("Gene") **SMITH** (19..-2007), USA

12. INTERNATIONAL HELIOPHYSICAL YEAR 2007

The International Heliophysical Year (IHY) is an international program of scientific research and collaboration to understand the external drivers of the space environment and climate. It began this year, the 50th anniversary of the International Geophysical Year. The IHY involves utilizing the existing assets from space and ground as a distributed Great Observatory and the deployment of new instrumentation, new observations from the ground and in space, and public and student education. The IHY officially was launched on 19-20 February 2007 with a "kick-off" ceremony and workshop in Vienna. See
<http://ihy2007.org/newsroom/opening_ceremony.shtml>.

Within the IAU, coordination of IHY activities resides in IAU Division II on *Sun and Heliosphere*, with Donald B. Melrose as President. David F. Webb is the IAU representative to the IHY and Nat Gopalswamy is the Chair of the IHY subgroup within the IAU Div.II/WG on *International Collaboration on Space Weather* (ICSW). Hans J. Haubold leads the IHY effort for the United Nations under the auspices of UN-COPUOS and the UN Basic Space Science program.

A key aspect of the IHY program is the cooperative initiative with the UN-BSS program, through which the IHY is assisting in deploying arrays of small instruments to make global measurements. The program provides meaningful participation for developing nations and facilitates contacts between the instrument providers and university groups from potential host nations. Currently 15 instrument concepts have been developed and many are being deployed. These include a network of radio telescopes to observe CME-related radio bursts, chains of magnetometer arrays to observed magnetic activity, and hundreds of GPS receivers to observe the ionosphere. These concepts were presented and discussed at the annual IHY-UN UN-BSS workshops in November 2005 in the United Arab Emirates, and in November 2006 in Bangalore, India. The third workshop was 18-22 June 2007 in Tokyo, Japan. The fourth workshop to include the first results from IHY programs will be held 2-6 June 2008 in Sozopol, Bulgaria. The fifth and last workshop is planned for 2009. The IAU is a co-sponsor of these meetings.

Many scientific meetings and workshops related to IHY have been planned for this year and next. These included meetings held in India and Germany in May, Mexico and Italy in June, and the World Space Week, celebrated worldwide in October 2007 with the Sputnik 50th Anniversary Celebration and Symposium. Upcoming meetings include the International IHY Symposium and Sputnik 50th Anniversary Celebration, Zvenigorod, Moscow, Russia, 5-10 November 2007 and the Second IHY SCINDA Workshop and IHY-Africa Space Weather Science and Education Workshop, Addis Ababa, Ethiopia, 11-16 November 2007.

An IAU Symposium, no. 257, involving IHY science topics has been approved for next year with title *Universal Heliophysical Processes*, and is planned for

15-19 September 2008 in Ioannina, Greece. SOC Chairs are Nat Gopalswamy, David F. Webb and Kazunari Shibata; the LOC Chair is Alexander Nindos. For further details of this IAU Symposium, see § 6.1. of this Bulletin.

IHY Outreach activities include spreading knowledge of space science and exploration to the public and inspiring the next generation of space scientists, and these are led by Cristina Rabello-Soares. There are now outreach coordinators in over 20 countries. A resource CD is being developed and IHY-related materials are being translated into various languages. In Thailand an IHY booth was set up by the Thai IHY group during the annual Science and Technology Fair in Bang Na (near Bangkok) during 8-19 August 2007; the fair was attended by about 1 million students. The Center for Science Education at the University of California, Berkeley, and the Stanford Solar Center sponsored special web-based activities to celebrate World Space Week and the 50th Anniversary of the Sputnik Launch this October. Teachers, students, and scientists participated in on-line investigations and discussions. IHY is also supporting the Geophysical Information for Teachers (GIFT) Workshop: *The International Heliophysical Year* at Addis Ababa, Ethiopia, on 10 November 2007.

As part of the IHY Outreach effort, the IHY Schools Program is developing a series of schools in 2007-2009 whose purpose is to educate students about heliophysics and universal processes. A summary of the school program, the general curriculum, and details on the scheduled schools is available at: <http://ihy2007.org/outreach/ihy_schools.shtml>.

Here is a brief update on the present status of the schools program. The NASA *Living with a Star* program is sponsoring a 3-year Heliophysics Summer School affiliated with NCAR in Boulder, CO, USA. The first school was held on July 30-August 8 and co-sponsored by IHY as the North America IHY School. 34 students attended the school, 14 from countries outside the USA, including Canada, India, Yemen, Germany, Ireland, Norway, France, Finland, and the UK The school was held over 8 days with about 25 lecturers and computer lab coordinators participating. Student feedback indicated that the school was very interesting and a great success! Applications are now being accepted for the 1st Asia-Pacific School, organized by the Indian Institute of Astrophysics (IIA), Bangalore, India, offers an intensive two-week course on topics related to heliophysics. About 50 students are expected. 60-70 students are expected to attend the 1st Latin America School, organized by the Centro de Radioastronomia e Astrofísica Mackenzie (CRAAM) and to be held at the Presbyterian Mackenzie University in the center of São Paulo city in Brazil. Lectures will be in the mornings, and computer labs and other activities, such as visits to local institutes, will be in the afternoons.

The organization of the remaining three IHY Schools is proceeding. The 4th School, for Europe and Africa, is currently scheduled to be held at the International Center for Theoretical Physics in Trieste, Italy in October 2008. The 2nd Asia-Pacific school is planned for 2008 in China, and the 3rd Asia-Pacific school on Langkawi Island in Malaysia in March 2009.

Finally, the IHY Gold History initiative has the goals of identifying and recognizing participants in the first IGY, preserving memoirs, etc., of historical significance for the IGY, making them available to historians and researchers, spreading awareness of the history of geophysics, and planning special events. The first of these was the "IGY+50" Celebration at the IUGG meeting in Perugia, Italy, 2-13 July 2007. During the IHY session at the 2007 Solar Extreme Events meeting in Athens Greece, Nat Gopalswamy presented an overview talk on IHY activities.

David F. Webb, IAU Representative to the IHY
Hanscom, MA, USA, 2 November 2007

13. INTERNATIONAL YEAR OF ASTRONOMY 2009

The *International Year of Astronomy 2009* (IYA2009) initiative dates back to the IAU XXVth General Assembly 23 July 2003 in Sydney (Australia), where the GA unanimously approved a resolution in favour of the proclamation of 2009 as the International Year of Astronomy. Based on the initiative of Italy the General Conference of UNESCO, at its 33rd session, recommended that the UN General Assembly adopt a resolution to declare 2009 the *International Year of Astronomy*. It is anticipated that the United Nations 62nd General Assembly will proclaim the *International Year of Astronomy 2009* in December 2007. It is expected that the UN will designate the United Nations Educational, Scientific and Cultural Organization (UNESCO) as the lead agency for the IYA2009. The IAU will function as the facilitating body.

With the IYA2009 we celebrate a momentous event, the first astronomical use of a telescope by Galileo – an application of an invention that initiated 400 years of incredible astronomical discoveries. This event triggered a scientific revolution which has profoundly affected our worldview. Now telescopes on the ground and in space explore the Universe, 24 hours a day, across all wavelengths of light. The IYA2009 gives all nations a chance to participate in this ongoing, tremendously exciting scientific and technological revolution.

The IYA2009 is a global collaboration for a peaceful purpose – the search for our cosmic origin, a common heritage that connects every citizen of planet Earth. The science of astronomy represents millennia of collaborations across all boundaries: geographic, gender, age, culture and race, providing a full consistency to the UN Charter principles. In that sense, astronomy is a classic example of how science can contribute towards a deepening international cooperation and collaboration.

The implementation of the IYA2009 started in fourth quarter of 2006 after the IAU XXVIth General Assembly in Prague with the creation of an IAU Executive Committee Working Group, chaired by Catherine Cesarsky. On 1 August 2007, IYA2009 Coordinator Pedro Russo started to work fulltime for the IYA2009 secretariat, in close collaboration with the ESA/Hubble Education and Outreach group at ESO, Garching, Germany, led by IAU Press Officer Lars Lindberg Christensen. At the time of writing, three months later, there is significant progress to report.

Participating nations

As of 22 November 2007, an impressive 99 nations and 14 organizations have signed up to participate in the IYA2009. This is already now an unprecedented network of engaged astronomy communicators and educators. Around 140 nations are expected to participate in 2009. Participating countries so far are:

1. Algeria
2. Angola
3. Argentina
4. Armenia
5. Australia
6. Austria
7. Belgium
8. Benin
9. Bolivia
10. Brazil
11. Bulgaria
12. Canada
13. Chile
14. China Nanjing
15. China Taipei
16. Colombia
17. Costa Rica
18. Croatia, the Republic of
19. Cuba
20. Cyprus
21. Czech Republic
22. Denmark
23. Ecuador
24. Egypt
25. El Salvador
26. Estonia
27. Finland
28. France
29. Gabon
30. Georgia
31. Germany
32. Greece
33. Guatemala
34. Honduras
35. Hong Kong
36. Hungary
37. Iceland
38. India
39. Indonesia
40. Iran, Islamic Republic of
41. Ireland
42. Israel
43. Italy
44. Japan
45. Jordan
46. Kenya
47. Korea, Republic of
48. Latvia
49. Lesotho
50. Lithuania
51. Macedonia, Former Republic of Yugoslavia
52. Malaysia
53. Malta
54. Mauritius
55. Mexico
56. Morocco
57. Mozambique
58. Namibia
59. Nepal
60. Netherlands
61. New Zealand
62. Nicaragua
63. Nigeria
64. Norway
65. Oman
66. Pakistan
67. Panama
68. Paraguay
69. Peru
70. Philippines
71. Poland
72. Portugal
73. Qatar
74. Romania
75. Russian Federation
76. Rwanda
77. Senegal
78. Serbia, Republic of
79. Slovakia
80. South Africa
81. Spain
82. Sri Lanka
83. Sudan
84. Sweden
85. Switzerland
86. Tajikistan
87. Tanzania
88. Thailand
89. Tunisia
90. Turkey
91. Uganda
92. Ukraine
93. United Arab Emirates
94. United Kingdom of Great Britain and Northern Island
95. United States of America
96. Uruguay
97. Uzbekistan
98. Vatican City State
99. Venezuela, Bolivarian Republic of

The IAU welcomes suggestions for so-called "Single Points of Contact" from countries not listed here yet.

Participating organizations

Also astronomy and space related organizations are welcome in the IYA2009 collaboration. So far 14 such organizations have signed up:

1. United Nations Office for Outer Space Affairs
2. NASA
3. Universe Awareness (UNAWE)
4. ESO
5. European Science Foundation
6. EuroPlaNet

7. Arab Union for Astronomy and Space Sciences (AUASS)
8. European Space Agency (ESA)
9. International Planetarium Society (IPS)
10. European Society for Astronomy in Culture (SEAC)
11. Global Hands-on Universe (GHOU)
12. The Planetary Society
13. ASPERA
14. Astronomers Without Borders, USA

Organizational associates

Several scientific organizations are actively helping to fund the IYA2009 – these are the so-called "IYA2009 Organizational Associates":

1. American Astronomical Society, USA
2. L'Institut National des Sciences de l'Univers, France
3. Canadian Astronomical Society, Canada
4. Sterrenwacht Leiden, the Netherlands
5. NOVA, the Netherlands
6. Science & Technology Facilities Council, UK
7. Swiss Academy of Sciences, Akademie der Naturwissenschaften, Switzerland
8. ESO
9. Society for Popular Astronomy, UK

Meetings

Three IYA2009 meetings have been held so far:

1. AAS (Seattle, USA), January 2007
2. ESO (Garching, Germany), 3–4 March 2007
   <http://www.communicatingastronomy.org/iya_eso>
3. CAP2007 (Athens, Greece), 8–11 October 2007
   <http://www.communicatingastronomy.org/cap2007>

Several meetings on the IYA2009 are planned for the next year, including the following meetings or parts of meetings:

1. 5-10 April 2008: MEARIM2008:
   1st Middle East-Africa Regional IAU Meeting, Cairo, Egypt
   <http://www.mearim.cu.edu.eg/new/firstAnnouncement.htm>
2. The January 2008 AAS meeting
   <http://astronomy2009.us/blog/2007/10/21/aas-in-austin/>
3. The June 2008 AAS/ASP meeting
   <http://www.aas.org/meetings/aas212/>
4. 1-4 August 2008: APRIM-2008
   10th Asian-Pacific Regional IAU Meeting, Kunming, China Nanjing
   <http://www.ynao.ac.cn/~aprim/index.htm>
5. September 2008, JENAM 2008, Vienna

IYA2009 Cornerstones

So far, eleven global IYA2009 programmes, called "Cornerstones", have been initiated:

1. 100 Hours of Astronomy

This is a round-the-clock, round-the-globe event, including 24 hours of live webcasts, observing events and other activities connecting large observatories around the world. One of the key goals is to allow as many people as possible to look through a telescope, and see what Galileo saw - the four Galilean moons around Jupiter. The 24 Hours of Astronomy might coincide with "Dark Sky Event", a controlled reduction of city illumination in a Wave of Darkness around the globe to raise awareness that the dark sky is a majestic, but often overlooked cultural resource for everyone (security and safety issues to be considered). The "100 hours of Astronomy" will take place in the weekend of Thursday, April 2nd, through Sunday, April 5th, 2009. This includes two weekdays (school days), which is ideal for students and teachers, and two weekend days, which is ideal for families. The Moon is at first quarter on the 2nd, so it is at a good phase for early-evening observing that whole weekend.

Chair: Dennis Crabtree <dcrabtree@gemini.edu>.

2. The Galileoscope

Observing through a telescope for the first time is a unique experience that shapes our view of the sky and Universe. This IYA2009 programme wants to share this observational and personal experience with as many people as possible across the world and is collaborating with the US and Japanese National Nodes to develop a simple, accessible, easy-to-assemble and easy-to-use telescope, that can be distributed by the millions. Sharing these observations and making people think about their importance is one of the main goals of IYA2009: promote widespread access to new knowledge and observing experiences. We aim to give 10 million people their first look through an astronomical telescope in 2009. A worldwide Telescope Amnesty program will invite people to bring their little-used telescopes to IYA2009 events, where astronomers will teach how to use them and offer advice on repairs, improvements, and/or replacements, encouraging more people to stay involved in the hobby. We encourage the organizers of IYA2009 celebrations in all countries to promote similar activities, with as common goal of giving 10 million people worldwide their first look through an astronomical telescope.

Chair: Rick Fienberg <rfienberg@SkyandTelescope.com>.

3. Cosmic Diary

This project is not just about astronomy; it is more about being an astronomer. Professional astronomers will blog in text and images about their life, families, friends, hobbies, and interests, as well as their work – their latest research findings and the challenges that face them in their research. The

Cosmic Dairy aims to put a human face on astronomy. The bloggers represent a vibrant cross-section of female and male working astronomers from around the world. They will write in many different languages and come from five different continents. Outside the observatories, labs and offices, they are musicians, mothers, photographers, athletes, amateur astronomers. At work, they are managers, observers, graduate students, grant proposers, instrument builders and data analysts.

Chair: Mariana Barrosa <mariana.barrosa@multimeios.pt>.

4. *The Portal to the Universe*

The science of astronomy is extremely fast moving, and delivers new results on a daily basis, often in the form of spectacular news, images of forms and shapes not seen anywhere else, enhanced by illustrations and animations. Public astronomy communication has to develop apace with the other players in the mass market for electronic information, such as the gaming and entertainment industries. The problem today is not so much the availability of excellent astronomy multimedia resources for use in education, outreach and the like, but rather finding and accessing these materials. Laypeople, press, educators, decision-makers and even the scientists themselves deserve better access to press releases, images, videos and background information. We all need a single point of entry into all the cosmic discoveries that take place on a daily basis – a global one-stop portal for astronomy-related resources. The *Portal to the Universe* will enable innovative access to, and vastly multiply the use of, astronomy multimedia resources – including news, images, videos, events, podcasts, vodcasts, etc.

Chair: Lars Lindberg Christensen <lars@eso.org>.

5. *She is an Astronomer*

IYA2009 has the aim of contributing to four of the UN Millennium Development Goals, of which one is to "promote gender equality and empower women". Approximately a quarter of professional astronomers are women, and the field continues to attract women and benefit from their participation. However, there is a wide geographical diversity, with some countries having none, and others having more than 50% female professional astronomers. Also, the very high level of female dropouts shows that circumstances do not favour female scientists. Gender equality is of a major concern to the whole scientific community regardless of its geographic location. The problems and difficulties are different in all regions and continents. IYA2009's *She is an Astronomer* programme will offer platforms that address some of these problems.

Chairs: Enikö Patkos <epatkos@eso.org> and Francesca Primas <fprimas@eso.org>.

6. Dark Skies Awareness

It is now more urgent than ever to facilitate the preservation and protection of the world's cultural and natural heritage of dark night skies in places such as urban oases, national parks and astronomical sites, as well as to support UNESCO's goals of preserving historical astronomical sites for posterity. For this cornerstone project, IAU will collaborate with the US National Optical Astronomy Observatory, International Dark-Sky Association and other national and international partners in dark sky and environmental education on several related themes, including worldwide measurements of local dark skies by thousands of citizen-scientists using both unaided eyes and digital sky-quality meters (as in the successful *GLOBE at Night* program), star parties, new lighting technologies, arts & story-telling, and health and ecosystems.

Chairs: Doug Isbell <disbell@noao.edu> &
Connie Walker <cwalker@noao.edu>.

7. IAU/UNESCO Astronomy and World Heritage

UNESCO and the IAU are working together to implement a research and education collaboration as part of UNESCO's Astronomy and World Heritage project. This initiative aims at the recognition and promotion of achievements in science through the nomination of architectural properties, sites or landscape forms related to the observation of the sky through the history of mankind or connected with astronomy in some other way. The proposed lines of action are: identification, safeguarding and promotion of these properties. This programme provides an opportunity to identify properties related to astronomy located around the world, to preserve their memory and save them from progressive deterioration. The support from the international community through IYA2009 will be useful to support this activity, which will allow us to help preserve this sometimes very fragile heritage.

Contact: Karel van der Hucht <K.A.van.der.Hucht@sron.nl>.

8. Galileo Teacher Training Programme

There is an almost unfathomable amount of rich and very useful astronomy educational resources available today – mostly in digital form, freely available via the Internet. However, experienced educators and communicators have identified a major "missing link" the training of the educators to understand the resources and enable them to use it in their own syllabi. To sustain the legacy of the IYA2009, the IAU – in collaboration with the National Nodes and leaders in the field such as the Global Hands-On Universe project, the US National Optical Astronomy Observatory and the Astronomical Society of the Pacific – is embarking on a unique global effort to empower teachers by developing the Galileo Teacher Training Programme. The Galileo Teacher Training Programme goal is to create by 2012 a world-wide network of certified Galileo Ambassadors, Master Teachers and Teachers. Included in the programme is the use of workshops and on-line training tools to teach the

topics of robotic optical and radio telescopes, web cams, astronomy exercises, cross-disciplinary resources, image processing, and digital universes (web and desktop planetariums).

C*hairs* (TBC): Jim Manning <jmanning@astrosociety.org> and Rosa Doran <rosa.doran@gmail.com>.

9. *Universe Awareness*

   Universe Awareness (UNAWE) will be an international outreach activity that aims to inspire young disadvantaged children with the beauty and grandeur of the Universe. UNAWE will broaden children's minds, will awaken their curiosity in science and will stimulate internationalism and tolerance. Games, songs, hands-on activities, cartoons and live internet exchanges are devised in partnership with UNAWE communities throughout the world for children from the age of 4 onwards. UNAWE will enable the exchange of ideas and materials through networking and interdisciplinary workshops.

   Chair: Carolina Ödman <odman@strw.leidenuniv.nl>.

10. *From Earth to the Universe – an exhibit of astronomical images*

    The fantastic images of the Universe captured by humanity's fleet of ground- and space-based telescopes are largely responsible for the magical appeal that astronomy has on the people at large. Indeed, popular images of the cosmos can engage the general public not only in the aesthetics of the visual realm, but also in the science of the knowledge and understanding behind them. IYA2009 is an unprecedented opportunity to present astronomy to the global community in a way that has never been done before. The *From Earth to the Universe* project is an exhibition arranged by the IYA2009 that will bring these images to a wider audience in non-traditional venues such as public parks and gardens, art museums, shopping malls and metro stations.

    Chairs: Kimberly Kowal Arcand <mwatzke@cfa.harvard.edu>
    & Megan Watzke <kkowal@cfa.harvard.edu>.

11. *Developing Astronomy Globally* (working title)

    Observing through a telescope for the first time is a unique experience that shapes our view of the sky and Universe. This IYA2009 programme wants to share this observational and personal experience with as many people as possible across the world and is collaborating with the US and Japanese National Nodes to develop a simple, accessible, easy-to-assemble and easy-to-use telescope, that can be distributed by the millions. Sharing these observations and making people think about their importance is one of the main goals of IYA2009: promote widespread access to new knowledge and observing experiences. We aim to give 10 million people their first look through an astronomical telescope in 2009. A worldwide Telescope Amnesty program will invite people to bring their little-used telescopes to IYA2009 events, where astronomers will teach how to use them and offer advice on

repairs, improvements, and/or replacements, encouraging more people to stay involved in the hobby. We encourage the organizers of IYA2009 celebrations in all countries to promote similar activities, with as common goal of giving 10 million people worldwide their first look through an astronomical telescope.

Chair: Kevin Govender <kg@saao.ac.za>.

IYA2009 special Task Groups

Apart from the Cornerstones, six additional Task Groups have been set up

1. Opening Event at UNESCO, Paris. *Chair:* Françoise Combes.
2. Closing Event Task Group: Under formation.
3. EU Seventh Framework Programme (FP7) Task Group. *Chair:* Claus Madsen.
4. Kepler Task Group. *Chair:* Terence Mahoney.
5. Galileo Task Group. Under formation.
6. IYA2009 Multimedia New Years Eve Show Task Group. Under formation.
7. Solar Physics: under formation.

Conclusion

The IYA2009 organization is now, most likely, the largest global astronomy outreach network in history. It is now up to the participating nations and organizations to make it one of the most successful; leaving an imprint of inspiration and awe of our origin in the Universe on millions of young minds for a long time to come.

For more detailed information on current actions and on-going planning of the IAU EC Working Group on IYA2009, see: <http://www.astronomy2009.org/>.

Lars Lindberg Christensen, IAU EC-WG IYA2009 Secretary, IAU Press Officer <lars@eso.org>

Pedro Russo, IYA2009 Coordinator: <prusso@eso.org>
Garching-bei-München, Germany, 16 November 2007

14. YOUNG SCIENTIST'S PRIZE IN ASTROPHYSICS

The Commission on Astrophysics of the International Union of Pure and applied Physics (IUPAP) solicits nominations for its second, 2008, prize for an outstanding young astrophysicist, to be presented in December 2008 at the 24th "Texas" Symposium on Relativistic Astrophysics in Victoria, BC, Canada. Candidates for the prize must not have completed more than eight years of post-PhD research and related acivities at the time of the award. The prize will consist of an IUPAP medal and a cash award that can be used to support travel to the meeting. The winner will probably be asked to give a short talk about the work for which the prize is awarded at the Symposium.

Nominations can come from any astrophysicist who knows the nominee's work well. A nomination should consist of a letter explaining the nominee's qualifications, a complete CV and list of publications, and two letters of support, at least one of which must come from someone who is not at the nominee's institution, is not a past mentor, and is not a frequent co-author or other close collaborator. Materials must arrive by 1 March 2008 for full consideration. Nominations should be sent to the Acting Chair and Secretary of the Commission and to the Chair of the Selection Committee.

Acting Chair: M. Victoria Fonseca, Dept. Fisica Atomica, Molecular y Nuclear, Facultad de Ciencias, Universidad Complutense de Madrid, E-28040 Madrid, Spain <Fonseca@gae.ucm.es>. Commission Secretary: Patricia A. Whitelock, South African Astronomical Observatory, Box 9, 7935 Observatory, South Africa, <paw@saao.ac.za>. Selection Committee Chair: Virginia L. Trimble, Physics Department, Univ of California, Irvine, CA 92697-4575, USA, <vtrimble@uci.edu>.

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INTERNATIONAL ASTRONOMICAL UNION

UNION ASTRONOMIQUE INTERNATIONALE

The mission of the International Astronomical Union (IAU), founded in 1919, is to promote and safeguard the science of astronomy in all its aspects through international cooperation. The IAU, through its scientific bodies--12 Divisions, 40 Commissions and some 76 Working and Program Groups, which cover the whole spectrum of astronomy--wishes to promote and coordinate international cooperation in astronomy. As of September 2006, the IAU has over 9700 individual members in 87 countries. Of those, 64 countries are National Member. The IAU is member of the International Council for Science (ICSU).

The organization of scientific meetings is the IAU's key activity. Every year the IAU sponsors nine international Symposia. The *IAU Symposium Proceedings* series is the flagship of the IAU publications. Every three years the IAU has its General Assembly, during which six of the IAU Symposia of that year are incorporated in the scientific programme of that GA. A GA further offers some 25 Joint Discussions and Special Sessions, the proceedings of which are published in the *Highlights of Astronomy* series. The reports of the GA Business Meetings are published in the *Transactions of the IAU-B* series. All these proceedings are published by Cambridge University Press.

Among the other tasks of the IAU are the definition of fundamental astronomical and physical constants; unambiguous astronomical nomenclature; promotion of educational activities in astronomy; and early informal discussions on the possibilities for future international large-scale facilities. Furthermore, the IAU is the sole internationally recognized authority for giving designations and names to celestial bodies and their surface features.

The IAU works to promote astronomical education and research in developing countries through its Program Groups on International Schools for Young Astronomers (ISYA), on Teaching for Astronomy Development (TAD), and on World Wide Development of Astronomy (WWDA), as well as through joint educational activities with COSPAR and UNESCO.

The IAU web site provides on-line information on the Union's activities and links to the web sites of the IAU Divisions, Commissions, Working Groups, and Program Groups. Contact with the IAU membership is maintained through this Information Bulletin, published twice per year, with a paper version and an e-version available via the IAU web site.

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Cover picture legend: (1) Hans Lipperhey, inventor of the telescope in 1608. (2) The 40-ft Herschel telescope. (3) The NASA/ESA Hubble Space Telescope. (4) The ESO E-ELT design.
Credit: (1) Borello, Petro, 1655, *De Vero Telescopii Inventore*, p. 56. (2) M. Hoskin, 2007, *The Herschels of Hanover* (Cambridge, UK: Science History Publications Ltd). (3) NASA Hubble. (4) ESO.

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