NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE ● INTERNATIONAL COMMISSION FOR OPTICS

Winter College looks at light in nature

This year's successful ICTP Winter College ran from 30 January to 10 February.

Eugene Arthurs, SPIE's executive director, presents the Educator Award diploma to Prof. Gallieno Denardo.

Sir Peter Knight, Imperial College, UK, delivers the opening lecture "Classical and quantum imaging".

Among the many activities that the International Centre for Theoretical Physics (ICTP) organizes every year, there is an important activity relating to optics and photonics – the Winter College. This is dedicated to subjects that are relevant to the training of young researchers from all over the world and, in particular, addresses researchers from less-favoured regions. This year the Winter College, which was held in Trieste, Italy, was dedicated to quantum and classical aspects of information optics, and it was successful for both the organizers and the participants.

The ICTP hosted the meeting and received 174 applications from the five continents. Among the delegates, some 40.5% received financial support for accommodation and, in the case of young researchers from developing regions, a higher rate was awarded for their attendance at the Winter College. The participants, from 46 countries, came to listen to 15 lecturers and to present their own research during the LAMP (laser, atomic and molecular physics) seminars. These are organized every year and give the many participants from all over the world the opportunity to talk about their current lines of research, motivations and projects. This year for the first time there was an interactive poster session.

The meeting was supported by the cosponsoring organizations: ICO (the International Commission for Optics), OSA (the Optical Society of America), SPIE (the International Society for Optical Engineering) and OWLS (the International Society on Optics Within Life Sciences). Its directors, Prof. M L Calvo (Complutense University of Madrid, Spain), Prof. P Knight (Imperial College, UK), Prof. P Tombesi (University of Camerino, Italy) and local organizer Prof. Gallieno Denardo (ICTP), selected outstanding international lecturers, who covered the whole range of this field in optics. The meeting was dedicated to reviewing the fundamental principles of light signals in nature, treated under a quantum scope as photons interaction and related devices that allow the observation and detection of photons in various physical states. In addition, the counterpart of the classical electromagnetic framework for light interaction was presented.

The aim of the meeting was to make postgraduate students aware of the most important research challenges in the field of optics and photonics today.

The following lecturers gave talks: T Alieva (Complutense University of Madrid, Spain), M Bastiaans (Eindhoven University of Technology, the Netherlands), V Buzek (Slovak Academy of Sciences, Slovakia), M L Calvo (Complutense University of Madrid, Spain), P Cheben (National Research Council of Canada), J I Cirac (Max Planck Institute for Quantum Optics, Garching, Germany), A Friberg (Royal Institute of Optics, Sweden), J C Gutierrez-Vega (Technological Institute of Monterrey, Mexico), P Knight (Imperial College, UK), P Kumar (Northwestern University, US), F De Martini (University La Sapienza, Italy), M Padgett (University of Glasgow, UK), J Rarity (Bristol University, UK), P Tombesi (University of Camerino, Italy) and L Yaroslavsky (Tel-Aviv University, Israel).

The above lecturers covered a broad range of subjects, including classical and quantum imaging, classical and quantum coherence, light's orbital angular momentum, optical beams, holographic and photonic devices, quantum repeaters and communication channels. The directors and lecturers recognized that the contributions made by the participants in the LAMP seminars and poster session lived up to the high international standard for which ICTP colleges are known.

It was pointed out that the interest and enthusiasm for advanced research in emerging areas such as optical computing, classical coherence, quantum information and quantum computing are not restricted to the industrialized countries. These activities contribute positively to reduce the scientific training gap between nations and ensure the future availability of infrastructures for future generations of researchers and local technology.

The following participants presented seminars on their current research activities: M Aqueel Ahmad (Imperial College, UK), N Arshed (Quaid-I-Azam University, Pakistan), I Ashraf Zaid (Quaid-I-Azam University, Pakistan), J E Barkai (Bar Ilan University, Israel), S V Boriskina (V Karazin National Uni-

versity, Ukraine), S L Daffer (Imperial College, UK), A S Desyatnikov (Australian National University, Australia), L Hernández-Pozos (Universidad Autónoma Metropolitana, Mexico), C López-Mariscal (Technological Institute of Monterrey, Mexico), A R Moradi (Institute for Advanced Studies, Islamic Republic of Iran), A Nahal (Institute for Advanced Studies, Islamic Republic of Iran), M Nadasan ("Politechnica" University of Bucharest, Romania), A Serafíni (University College London, UK), A H Toor (Quaid-I-Azam University, Pakistan), C P Valdés (Universidad del Valle, Colombia), S P Walborn (Federal University of Rio de Janeiro, Brazil) and D N Yanyshev (M V Lomonosov Moscow State University, Russia).

This year, for the first time, a week of training at the school of mathematics was offered to selected participants, with the support of SPIE and the Italian Society for Optics and Photonics.

The academic and social interaction between the participants and lecturers is considered to be an extremely important aspect of the ICTP colleges. The three directors were especially grateful for the support and assistance given by the local organizer, Prof. Gallieno Denardo, and the secretary, Valerie Shaw.

In addition, the Trieste System Advisory Group for the advancement of optics in developing countries celebrated its annual meeting on 1 February and discussed the many relevant issues and activities to be initiated this year. On the same day the ICO/International Council of Science (ICSU) celebration took place (see *ICO Newsletter* January 2006).

The programme of the Winter College included the ICO/ICTP prize ceremony. The 2006 award was made to Dr Moya-Cessa of Mexico, a scientist and young researcher who has been pursuing his career in a developing country as defined by the UN (see *ICO Newsletter* January 2006).

The subsequent reception sponsored by the ICO provided a further chance, mainly for the young participants but also for more senior lecturers, to socialize and to celebrate with the ICO its recent admission as an international society in the ICSU. The reception was also attended by the current ICTP director, Prof. K R Sreenivasan.

For more information, see http://cdsagenda5.ictp.trieste.it/full_display.php?ida=a05190.

Adolph Lohmann celebrates his 80th year

A symposium was held in April celebrating the former ICO president's 80th birthday.

Prof. Lohmann and Prof. Haüsler, chair of the symposium.

The participants gather outside the second day's venue.

Adolph Lohmann, professor of physics at the Institute of Optics, Information and Photonics at the University of Erlangen-Nuremberg (Germany), former chair of applied optics and former ICO president (1978–1981), celebrated his 80th birthday in April. To mark this occasion his colleagues organized a two-day international birthday symposium entitled 50 Years of Information Optics. The event was held on 7–8 April, the first day at the University of Erlangen and the second in the charming region of Frankonian Swiss, located in Southern Bavaria near the Erlangen area.

There was a moving celebration in which all of the attendees, who came from all over the world, enjoyed the talks, anecdotes and scientific insights of their work that has been influenced and supported by Lohmann. Gerd Haüsler presented the welcome address and introductory sessions. He expressed his thanks to all of the attendees, and in particular to the chancellor of the University of Erlangen for the use of its facilities. He mentioned the great motivation of former students and friends to get together to honour the fruitful years of the academic and research activities of Lohmann.

Haüsler proceeded to introduce each of the session speakers: Gotthard Jasper, former chancellor of the University of Erlangen; Joseph Goodman from Stanford University; Asher Friesem from the Weizmann Institute of Tel-Aviv; and Jürgen Jahns from the Open University of Hagen. Jasper highlighted all of the important work done during the last 30 years that has contributed to building up a highly reputed international and prestigious group in optics.

In brief, Lohmann studied physics in Hamburg and later came to Erlangen. As an associate professor he started important work on the foundations and apodization techniques for his diploma. He then spent several years at the

Prof. Lohmann delivers the closing lecture of his birthday celebration.

Prof. Sinzinger presents the new edition of *Adolph Lohmann's Notes* to Prof. Lohmann, which was published as part of the birthday celebrations.

University of San Diego and initiated new and interdisciplinary work, becoming head of the optics group in Erlangen. One of his many international achievements is that he has been a recipient of the OSA Max Born Award. He is also a member of the Academy of Sciences of Germany. Lohmann has always remained highly devoted to his students.

Lohmann established the optics group in Erlangen in 1973 with a small laboratory, explained Haüsler. In only 10 years the number of researchers multiplied by a factor of 10. One of the recurring themes in Lohmann's work was "Is it possible to teach how to invent?", and this still provides motivation. In 1980 he started his work on computer holography, although there was some scepticism about this from part of the scientific community. However, this has turned out to be one of the most appealing technologies with significant applications in metrology and bio-optics, and it produces many industrial patents.

Goodman presented his talk entitled "New applications of speckles – or how Adolph Lohmann influenced my career". He mentioned all of the work done on computer-generated holograms, speckle masking, super resolution (1964) and theta modulation (1965). He then highlighted the most important results based on Lohmann's earlier publications: single side-band holograms (1956), detour-phase holograms (1966), and triple correlation, bispectra (1983) for improving telescope resolution and resolving double-stars images. Lohmann also developed pioneering work on Wigner distribution and fractional Fourier transforms, including a number of unpublished results. Lohmann, a devoted teacher, was quoted as saying: "I believe teaching optics is easy because it corresponds to a visual process." Lohmann is always a source of kindness and encouragement.

Friesem dedicated his talk to "Lohmann in the Holy Land", while remembering all of the extremely fruitful visits that Lohmann made to various centres in Israel. There he gave many lectures and seminars, and made visits to laboratories, thereby creating unique opportunities not only for scientific understanding but also for friendship – an important part of our lives that is sometimes ignored or misunderstood within the world of science.

Jahns referred in his presentation, "Optics in space and time with Adolph Lohmann", to the work done in Erlangen under his leadership, including annual reports for more than 30 years, referring to topics such as speckle, optical feedback, incoherent and coherent self-imaging, optical computing and photonic crystals. He mentioned the work done in collaboration with Goodman on fan-in, fan-out optical interconnections, fractional temporal Talbot effect, grating spectroscopy with new designs for temporal signal delay, compression and decompression. He referred to the recent publication of *Adolph Lohmann's Notes*, which was a present from all of his colleagues with the financial support of the University of Erlangen.

The talks were accompanied by some musical interludes, demonstrating the amazing sounds created by Bavarian orchestras and adding some colour to the proceedings.

On the following day the meeting continued in the unique atmosphere of a Bavarian village. The whole day was dedicated to short presentations from many of Lohmann's friends and colleagues who came from all over the world – France, Germany, Israel, Italy, Japan, the Netherlands, Switzerland, Taiwan and the US – including both scientific and miscellaneous aspects of their experiences as Lohmann collaborators.

Lohmann thanked all of the attendees, and gave a closing presentation with the amazing and suggestive title "Will optics remain schizophrenic forever?" After 60 years he was still posing the same question: "What is light?" He showed that his interests are beyond pure mathematics or physics, transcending to philosophical questions in a procession from Ptolomeus to Bohr, not forgetting Copernicus and Kirchoff. As an unforgettable end he suggested that after all, light is mainly Wigner stuff, it can behave as a fluid, although we do not need to know Wigner but, it is aesthetically pleasant.

With this modest but sincere article, ICO is honoured to have participated in this celebration. Mit unserem ganz herzlichen Glückwunsch zum Geburtstag!

María L Calvo, ICO secretary general

Argentinean Territorial Committee gets a new president

Prof. Hector Rabal is elected as the new president for the 2006–2008 period.

The Argentinean Territorial Committee has recently elected Prof. Héctor Rabal as its new president for the period 2006–2008. Rabal is a researcher at the Centro de Investigaciones Ópticas (CONICET-CIC) and professor of the University of La Plata.

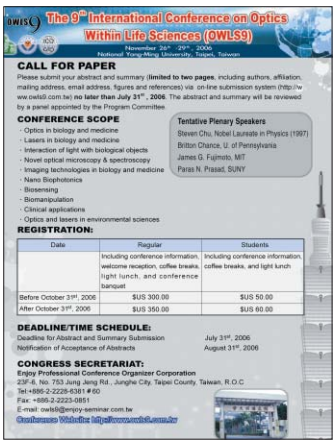
The ICO would like to express its sincere thanks and gratitude to Prof. Jorge O Tocho, also from CONICET-CIC, for the work that he achieved during his time as president of the Territorial Committee.

We warmly welcome Rabal and wish him a fruitful period in his ICO representation.

The ICO secretariat would like to encourage all Territorial Committees to send in their news to the *ICO Newsletter* in order to keep all of the ICO optics community updated on their recent activities.

9th OWLS Conference to focus on trends in biophotonics

The OWLS9 conference will be held in Taiwan on 26–29 November.



The OWLS9 call for papers.

OWLS, the International Conference on Optics Within Life Sciences, is one of the principal forums for scientists, engineers and research students to exchange topical research and development information and to stimulate discussion about novel applications and concepts. Following previous OWLS meetings, the 9th International Conference on OWLS (OWLS9) – NYMU Biophotonics 2006 – will be an interdisciplinary event devoted to biophotonics and nanobiophotonics, covering all applications of optics and lasers in the life sciences, including biology, medicine, environmental science and clinical applications. The scientific programme will consist of invited and contributed talks, as well as poster sessions. There will also be a trade exhibition. The meeting starts on 26 November with two preconference tutorial lectures, one by Prof. P N Prasad (SUNY, Buffalo), who will give an overview of biophotonics and nanobiophotonics, and the other by Prof. James Fujimoto (MIT), who will speak about optical coherence tomography, followed by a preconference reception dinner.

OWLS9 has received financial support from ICO, an official sponsor of the OWLS9. This grant will be used to help scientists from developing countries to attend the meeting. Up to five scientists will be supported by the grant and they will each receive $400 for travel. In addition, the organizing committee will provide them with further support by waiving the registration fee and covering the cost of accommodation in Taipei during the conference for up to five nights.

Further information about OWLS9 (submission, registration, accommodation and travel support) can be found at www.owls9.com.tw.

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Forthcoming events with ICO participation

Below is a list of events with ICO participation that are coming up in 2006–2008. For further information, see www.ico-optics.org/events.html.

28–31 August 2006
8th International Conference "Micro- to Nano-Photonics" – ROMOPTO 2006. Sibiu/Hermannstadt, Romania. Contact: Prof. V I Vlad. E-mail: vlad@nipne.ro. Web: www.infirm.ro/ROMOPTO2006.

4–7 September 2006
ICO Topical Meeting on Optoinformatics 2006/ Information Photonics 2006. Saint Petersburg, Russia. Contact: Dr Alexander V Pavlov. E-mail: pavlov@soi.spb.ru. Web: http://ysa.ifmo.ru/tmo2006/.

26–29 October 2006
7th International Young Scientists Conference "Optics and High Technology Material Science" – SPO 2006. Kiev, Ukraine. Contact: Dr Viktor O Lysiuk. E-mail: lysiuk@univ.kiev.ua.

13–17 November 2006
1st Andinean and Caribbean Conference on Optics and its Applications. Santiago de Cali, Colombia. Contact: Prof. E Solarte. E-mail: esolarte@calima.univalle.edu.co.

3–10 December 2006
8th LAM Workshop on Physics and Applications of Lasers. Addis Ababa, Ethiopia. Contact: A Asfaw. E-mail: araya@phys.aau.edu.et.

6–8 December 2006
5th International Conference on Optics, Photonics Design and Fabrication – ODF '06. Nara, Japan. Contact: Prof. Tsuyoshi Hayashi. E-mail: hayashi@pac.ne.jp. Web: www.odf.jp/in.html.

12–16 December 2006
8th International Conference on Optoelectronics, Fiber-Optics and Photonics. Hyderabad, India. Contact: Prof. D N Rao. E-mail: dnrsp@uohyd.ernet.in.

17–19 April 2007
International Workshop "Tecnolaser 2007". Havana, Cuba. Contact: Dr J R Triana. E-mail: tecnolaser@ceaden.edu.cu.

5–7 September 2007
International Conference on Optics and Laser Applications – ICOLA. Yogyakarta, Indonesia. Contact: Dr Sar Sardy. E-mail: sardy@eng.ui.ac.id.

25–27 September 2007
ETOP 2007. Ottawa, Canada. Contact: Dr Marc Nantel. E-mail: marc.nantel@oce-ontario.org.

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