NEWSLETTER

COMMISSION INTERNATIONALE D'OPTIQUE ● INTERNATIONAL COMMISSION FOR OPTICS

Obituary: Giuliano Toraldo di Francia

The ICO mourns the passing of a pioneering ICO leader.

Giuliano Toraldo di Francia in the Dolomite mountains. (Courtesy of his family).

Below: this photograph was taken at the "Réunions d'Opticiens" in Paris, October 1946, where the creation of an international commission for optics was discussed. G Toraldo de Francia stands a little to the left of center, halfway towards the back, with glasses, a dark suit and handkerchief in his breast pocket. Identifications of the others in the photo, many quite important in the recent history of optics, are to be found at the ICO website.

Giuliano Toraldo di Francia, professor emeritus of physics at the University of Florence, and an ICO pioneer, died in Florence on 26 April 2011, aged 94. After gaining a degree in physics from Florence University in 1939, he joined the National Institute of Optics, now INO-CNR, where he started his research. In 1943 he moved to the Ducati company, where during the next seven years he designed optical systems. In 1951 he came back to INO as professor of optics, until 1958. During that period he wrote one of his most translated scientific books, *Electromagnetic Waves* (1953) and a few years later, in 1958, the book *La diffrazione della luce* was published, gaining noticeable international attention.

Toraldo di Francia also went to America, spending two years at the University of Rochester as professor of optics before returning to Europe, when in 1959 he was hired as chair of optics at the University of Florence. In 1963 he moved to the chair of higher physics, a position he held until retirement in 1991. From 1968–73 he served as president of the Italian Physics Society (SIF). From 1976–81 he directed the University Institute of Higher Physics, which he founded. After his return from the US he collaborated with the Institute of Electromagnetic Waves of the National Research Council of Italy, IROE-CNR (now IFAC-CNR). He promoted research on microwaves and optics and, very early after the demonstration of the laser, he fostered the CNR programme "Maser and Laser", which introduced laser activity to Italy. From 1970–81 he was also IROE's director.

Toraldo di Francia was the last surviving member of the ICO founders from Prague in June 1947. In preparation for the first plenary session of ICO in Amsterdam in July 1948, the Italian delegation prepared a report on diffraction theory, under the responsibility of Toraldo di Francia. He served two terms as ICO vice-president and was president from 1966–69.

Toraldo di Francia was a great scientist who made outstanding contributions to the field of electromagnetic waves and optics. One of his first results in diffraction by surfaces was in 1941 with the formulation of the "Inverse interference principle", a particular case of which (diffraction by plane surfaces) gave rise to Fourier optics. Other seminal results came from the demonstration of the existence of evanescent waves in diffraction phenomena, extensive studies of the quasi-Cherenkov effect based on evanescent waves, and deep investigation of geodesic lenses. Working on antennas, he introduced the concept of super-resolution, showing that with suitable filters in the pupil plane of an aperture (Toraldo filters) it is possible to increase the resolution in a given direction, beyond the diffraction limit. Another of his innovative contributions to optics was the introduction of the "Degrees of information of images", where he offered a new approach based on information theory and on information content of the images, to the classical concept of resolving power.

Toraldo di Francia had a great interest in philosophy and its relationship with physics. His book *The Investigation of the Physical World*, in which he presented physics methods to the scholars of philosophy, was also published in English. In 1984 he founded the Forum for the Problems of War and Peace, which is still active. His passion for music led to him to be involved in the School of Music of Fiesole, and he also wrote the "libretto" for *Talgor*, an opera by Riccardo Luciani. Toraldo di Francia was an OSA Fellow and Honorary Member of the Italian Society of Optics and Photonics, SIOF. Some of the recognitions that he received include the Young Medal of the Institute of Physics, the OSA C. E. K. Mees medal, and the Gold Medal of the Ministry of Public Instruction of Italy.

Anna Consortini (University of Florence) and Giancarlo Righini (Istituto di Fisica Applicata "Nello Carrara"), Florence, Italy

Optics and photonics in Portugal

Portugal's first international conference benefits from large attendance and range of contributions.

Manuel Filipe Costa, chair of AOP 2011, and president of the recently created Portuguese Society for Research and Development of Optics and Photonics, SPOF.

Portugal's recent international conference on optics and photonics (AOP2011) was both exciting and friendly, creating a rewarding conference. The 257 participants shared ideas and experiences, discussed recent developments in optics and photonics and prepared new development paths and co-operation projects. The conference was held 3–7 May at the University of Minho and at the Melia Braga Hotel & Spa in Braga, Portugal. It is the first major international organization of the Portuguese Society for Research and Development of Optics and Photonics, SPOF.

The Portuguese Optics and Photonics Society was established in November 2009. It reflects the development of scientific and technological research in optics and photonics in Portugal over recent decades. Its main goal is promoting the development of optics and photonics. Coming from all Portuguese continental and Atlantic autonomous regions, SPOF has an increasing membership of over 50 regular members and several dozen student members working in most fields of pure and applied research at universities, research institutions, industry services and education. The conference was organized to foster the establishment of the widest range of co-operation projects and relationships with colleagues and institutions from all around the world, while increasing the external visibility of Portugal's optics and photonics research.

The success of the conference was only possible with the commitment of Portuguese optics and photonics scientists and the support and participation of important international scientific optics societies: ICO, SPIE, OSA, EOS, Photonics'21, RIAO and SECPhO, SEDOPTICA, AMO, CTOM, STO, OPSS, CVO, APLO, SPF and FCT, plus contributions from over 460 authors and co-authors from 47 countries. World-leading scientists were invited to give 38 lectures, giving an overview of the state of optics and photonics research across the world and pointing out future development perspectives.

From the 256 works accepted across all fields of optics and photonics, 237 were effectively presented (103 posters and 134 oral). Nearly 200 full papers were uploaded into the MySPIE system to be published, after peer-reviewing, by SPIE in an ISI/SCI indexed proceedings book. Almost 40% of the works presented originated from Portugal. Spain's remarkable representation accounted for nearly 20% of participants.

Right: participants at AOP 2011. Manuel Filipe Costa, chair of the conference, stands in the lower right corner. Towards the lower left corner, wearing the name badge, is Eric Rosas, the president of the RIAO. Between these two, from left to right, are four of the five female plenary lecturers: Maria L Calvo (ICO president), Anna Consortini (ICO past-president), Katherina Svanberg (SPIE president), and Maria J Yzuel (SPIE past-president). Missing from the photo is Malgorzata Kujawińska (past-president, SPIE), who had to leave the conference early.

ICO president Maria Calvo speaking at the conference.

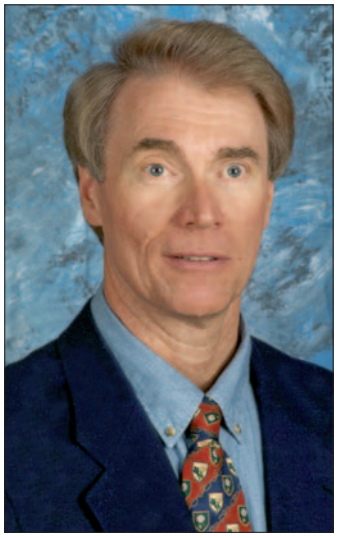
The conference had 257 effective participants (plus 85 undergraduate students on 3 and 5 May sessions on vision sciences and optometry). Although three-quarters of the participants came from Europe, Asia and Latin-America also had an important presence; scientists from nine Latin-American countries made up roughly 10% of participants. The Ibero-American Optics Network (RIAO) organized a special session on co-operation in optics and photonics in the Iberia/Latin-American region. SecPho, the Southern Europe Cluster on Photonics, presented the experience of Iberian optics companies. The European Commission, through its unit G5, also expressed its support for the conference and its commitment to research in photonics in Europe. A third of participants were students, a good percentage of whom came from developing countries. Roughly 50% of the Portuguese participants were PhD and masters students, highlighting the vitality and growth potential of Portugal's research in optics and photonics.

The participation of female optics scientists was also worth noting in relation to the quality of works presented and the number of participants rising to nearly one-third of the total. The conference's first plenary speakers were five of the most distinguished female optics scientists including former and current ICO, SPIE and OSA presidents. SPOF is a member of the European Optics Society and founding member of RIAO, the Ibero-American Optics Network, and is establishing close relationships with other societies around the world. Next year we will organize an international summer school, and in September 2013 we will host the 8th Ibero-American Optics Meeting (RIAO/OPTILAS). We look forward to welcoming you to the next AOP conference in spring 2014.

Manuel Filipe Costa, president of the Portuguese Society for Research and Development of Optics and Photonics

The ICO travelling lecturer programme

Applications are open for the current travelling lecturer programme.



James Harrington, ICO treasurer, invites applications from potential ICO travelling lecturers.

The ICO travelling lecturer programme promotes lectures on modern aspects of optics in interested territories and is aimed at developing nations. Participants in the programme have found that visits to the host country have led to closer collaboration between the lecturer and the scientists in that country. The programme is aimed at developing nations but not necessarily restricted to them.

Generally, the lecturer's local expenses are met by the host institution and ICO's contribution is used to defray travel costs. These grants are set up to foster relationships with scientists working in the host countries. Within the financial limits of the budget, an ICO committee decides on the grants. Typically, an individual grant will be about $1000, or sufficient to cover travel expenses. Between three and five travelling lecture grants are awarded during the three-year period between the ICO triennial meetings.

Successful applicants are asked to serve as an "ambassador" by ICO. Upon returning, the applicant is asked to complete a trip report detailing the state of science in the visited region. Often the awardee writes a short article detailing the experiences during the trip and how the lecturer interacted with students, for publication in the *ICO Newsletter*. Recent travelling lecture awardees are Prof. Imrana Ashraf Zahid from the Department of Physics at Quaid-i-Azam University, Islamabad, Pakistan, and Prof. Maxim Tomilin. Zahid's visit was hosted in 2008 by Prof. Khalid Berrada, from the Department of Physics, Cadi Ayyad University, Marrakech, Morocco. Her aim was to introduce quantum optics to the young students at the university and motivate the faculty to add this course to their curriculum.

On returning from her visit to Marrakech, Zahid remarked that she really enjoyed her discussions with students. She further remarked that interacting with students from another developing country like Pakistan gave her a feeling of achievement and happiness. Prof. Maxim Tomilin from the State University of Information Technologies was hosted by Prof. Hector Rabal at the Optical Research Center at La Plata (CIOP), Prof. Graciela Romero at Salta University and Prof. Liliana Perez of Buenos Aires University. ICO encourages its travelling lecturers to visit several institutions in the hosting country. Tomilin considered that "the travel grant organized by ICO gave the opportunity for exchanging scientific information and traditions in education and culture, and mutual contact between scientists working in distant continents."

Scientists or host groups interested in participating in this programme should send an application by e-mail to the treasurer of ICO with details of the proposed lecture programme and support required. An application form can be obtained from the ICO website at www.ico-optics.org/ICO_Traveling_Lecturer_App.doc. Official letters of invitation from the local institutions or research centres are also required, along with a proposed calendar of activities supported by the host institution. Completed applications should be sent to: James A Harrington, professor of material science and engineering, Rutgers University, 607 Taylor Road, Piscataway, New Jersey 08854-8065, USA.

James A Harrington, ICO treasurer

ICO elections and General Assembly 2011

ICO welcomes all territorial committee delegations to the triennial general assembly.

We are rapidly approaching the 22nd ICO Congress, which will take place on 15–19 August in Puebla, Mexico. One of the most exciting events in this congress is undoubtedly the election of the new ICO Bureau for the next triennial period 2011/14. In October last year, the first call for nominations of candidates for the various positions in the bureau went out to our members worldwide. The response has been good and we have an outstanding roster of nominations for all positions. However, I would like to emphasize that the nominations are still open. All territorial committees can nominate candidates of their choice for any of the bureau positions, with the exception of past-president. If the candidate is not from the nominating territory then an endorsement from the candidate's own territorial committee is required. It is also important to recall that at least two of the elected vice-presidents must represent industry. Besides nominations, we now also accept endorsements of the existing candidates by the other territorial committees. Endorsement means that the candidate is considered by the endorsing territory as a good person to stand for an ICO election and is to be understood as an intention, not an obligation, to support this candidate at the election, given the list of candidates at the time of the endorsement. Send all new nominations and endorsements as early as possible by post or e-mail.

Nominations and endorsements are open until 24 hours before the actual time of the voting. The elections take place at the general assembly, which meets in two sessions: the first is on Monday 15 and the second on Wednesday

17 August. The candidates and endorsements received up to that point are then introduced to the delegates in general assembly one. Each territory can appoint as many delegates to the general assembly as it has votes, and during the congress the delegation of the territory makes nominations and endorsements in its name. After the closure of the nominations, a final list of candidates is established, and the election takes place in general assembly two.

Unlike many other elections, tradition has it that there is no official campaign for the ICO Bureau. However, candidates are requested to bring a brief CV and statement for distribution to the delegates at the general assembly. These election activities are some of the most significant responsibilities of the ICO territorial members, as their nominations and votes will, in large, determine the character of the ICO in the years ahead. The officers elected by the general assembly and the vice-presidents appointed by the international organization members make up the new ICO bureau, which for the next three years after ICO-22, will globally carry forward ICO's business and programs in optics and photonics.

Ari T Friberg, ICO past-president, Aalto University, Department of Applied Physics, Box 13500, FI-00076 Aalto, Finland, ari.friberg@aalto.fi (or ari.friberg@tkk.fi)

Contacts

International Commission for Optics (www.ico-optics.org).

IUPAP Prize in Optics 2011

For the third year running, in 2011 ICO will give out the IUPAP Young Scientist Prize in Optics. The prize, which includes a medal, certificate and cash award of €1000 provided by the IUPAP, is an achievement prize for optical scientists early on in their careers. The prize is administered by ICO as an affiliate commission of the IUPAP.

The IUPAP Prize in Optics is awarded to an individual who has made an outstanding contribution in the field of applied optics and photonics. The rules state that the winner can have no more than eight years of research experience after obtaining a doctoral degree (possible career interruptions are excluded). Hence the winner of the 2011 IUPAP Prize must have completed the doctoral degree in 2004 or later. The scientific achievement must be well documented in the literature.

Nominations for the 2011 IUPAP Young Scientist Prize in Optics are accepted until July 15. Detailed instructions and the nomination form can be found on the ICO website (www.ico-optics.org). Encouraging young, excellent scientists in the early stages of their careers is an important part of the training. It may lead to high rewards in scientific accomplishments, so I ask all research leaders to nominate their best and brightest young optical researchers for the IUPAP Prize in Optics. Nominations should be e-mailed or posted to me.

Ari T Friberg

Forthcoming events with ICO participation

Below is a list of events with ICO participation that are coming up in 2011. For further information, see www.ico-optics.org/events.html.

15–19 August

ICO-22, International Commission for Optics Congress
Puebla, Mexico
Contact: Fernando Mendoza Santoyo, tel +52 477 44142; fax +52 477 441-4208; fmendoza@cio.mx
www.cio.mx/ICO2011/1.htm

12–16 September

Conference Correlation Optics 2011
Chernivtsi, Ukraine
Contact: Oleg V. Angelsky, tel +380 3722 44730; fax +380 3722 44730, angelsky@itf.cv.ua
www.itf.cv.ua/corropt11/

19–23 September

11th International Conference on New Developments and Applications in Optical Radiometry (NEWRAD 2011)
Hawaii, USA
Contact: Erkki Ikonen, tel +358 5055 02283; fax +358 9451 2222, erkki.ikonen@tkk.fi
http://newrad2011.org/

29–31 March 2012

Education and Training in Optics and Photonics (ETOP)
Carthage, Tunisia
Chair: Zohra Ben Lakhdar
Contact: Mourad Zghal, tel +216 7185 6240; fax +216 7185 6829
mourad.zghal@supcom.rnu.tn
www.esprit-prepa.com/etop/

Responsibility for the accuracy of this information rests with ICO. President: M L Calvo, Universidad Complutense de Madrid, Departamento de Óptica, Facultad de Ciencias Físicas, Ciudad Universitaria s/n, E 28040 Madrid, Spain; mlcalvo@fis.ucm.es. Associate secretary: Gert von Bally, Centrum für Biomedizinische Optik und Photonik, Universitätsklinikum Münster, Robert-Koch-Straße 45, 48149 Münster, Germany; Ce.BOP@uni-muenster.de.