International Organization for Medical Physics

Electronic Medical Physics World

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Remarks of Professor Dr. Fridtjof Nüsslin,

President of the IOMP

Welcoming the Delegates to the 18th International Conference on Medical Physics,6th Latin American Congress on Medical Physics, 15th Brazilian Congress on Medical Physics, 5th Instrumentation and Medical Imaging Symposium

Welcome to the 18th International Conference on Medical Physics,6th Latin American Congress on Medical Physics, 15th Brazilian Congress on Medical Physics, 5th Instrumentation and Medical Imaging Symposium

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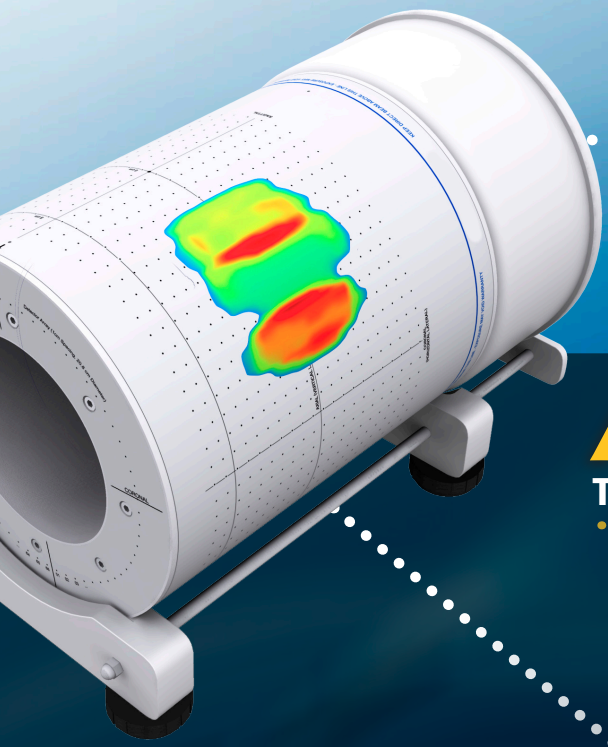

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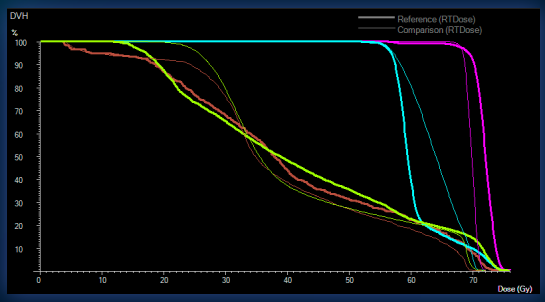

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* Per-beam, planar IMRT QA passing rates do not predict clinically relevant patient dose errors, Med. Phys. 38, 1037

Japan Earth Quake and Nuclear Disaster

It was the 11th March when the big earthquake followed by a tsunami and the subsequent nuclear calamity of Fukushima occurred.

Thousands of thousands of people have been affected by that series of disasters, among them also many of our colleagues working at universities, hospitals and science institutions. On behalf of all medical physicists worldwide I would like to express our compassion with our friends, colleagues, their families and all people in Japan.

In remembrance of all the disaster victims let us hold a minute of silence.

Thank you. Dr. Shigekazu FUKUDA, Chair of Int'l Affairs Committee of JSMP is with us today. Please, Dr.Fukuda express our cordial sympathy to JSMP.

Welcome

Distinguished Guests, Dear Colleagues and Friends, Ladies and Gentlemen,

within the allocated time it is hardly possible to welcome specifically all the honour guests individually, please forgive me to shorten the time expressing my general gratitude to the most significant support by our hosts and the distinguished representatives of the Brazilian Ministry of Science & Technology, of the Brazilian Ministry of Tourism, of the Rio Grande do Sul State, of the City of Porto Alegre and of the Pontifical Catholic University of Rio Grande do Sul giving us the opportunity to hold the 18th International Conference on Medical Physics in this beautiful environment.

Three characteristics make a congress a success, the scientific program, the selection of the venue and most importantly the hosting management team. I am sure in the long history of ICMPs this 18th International Conference on Medical Physics will turn out to be a most remarkable event in all three aspects. However, what is actually unique in this meeting is the specific mixture of strong leadership, charm and friendliness rarely found in congresses of that size, and this is certainly

due to the fact that the key positions and offices are all held by distinguished ladies: I am pleased to thank Dr. Simone Kudlovich - President of the Latin American Association of Medical Physics (ALFIM), Dr.Cecília Kalil Haddad - President of the Brazilian Association of Medical Physics, Dr.Ana Maria Marques da Silva - President of the 18th ICMP and last not least, Dr.Cari Borras, Chair of the Scientific Committee of this conference.

It is my particular pleasure and honour to welcome all attendees of the ICMP-2011, the delegates of the IOMP, its Regional Organizations, in particular from the ALFIM and the AAPM traditionally networking the medical physicists of the two Americas, the representatives of the World Health Organization (WHO), the International Atomic Energy Agency (IAEA), the Pan American Health Organization (PAHO). A warm welcome also to President Ken Kase of the International Radiation Protection Association (IRPA).

Industry

I further would like to express my gratitude to the representatives of the Industry. Without your generous sponsorhip such a meeting can hardly be organized. But it is more than sponsoring what I gratefully address: partnership between manufacturers and medical physicists is the essence in the development of all your products. I am sure everybody will enjoy the industrial exhibition and use the breaks during our scientific program to become acquainted with your innovations and exchange ideas for further advancement.

Scientific Program

For six days Porto Alegre is the focus point of the international community of Medical Physicists, working in hospitals, universities, research institutions, health care organizations, industry and administrations. For these few days Porto Alegre is the World market place of Medical Physics, the stock exchange for novel products, the agora for debating controversies and new ideas, and not least a high-school and university bringing together teachers and students from all over the world. All these facets of Medical Physics converge towards the advancement

in patient care by disseminating, instrumentation, skills and competence. Nowadays, every branch of medicine is benefitting of medical physics, and medical physics has been expanded far beyond the classical playground of applying ionizing radiation in radiological practice. Imaging technologies and instrumentation is a hallmark of current medical physics development. Image guidance in surgery, radiotherapy, cardiology etc. ensure effective and less harming interventions at an ever earlier stage of disease. Laser based imaging methods such as phase contrast imaging provides access to nano-scale resolution with high potential in early cancer detection.

A first glance at the scientific program demonstrates the wide spectrum of current Medical Physics and we greatly acknowledge the magnificent work of the Scientific Committee of this conference which has dished up such an opulent scientific menu many a participant will be spoilt for choice.

If you look more detailed at the program you will find the scientific sessions being completed with other events such as International Bord Certification of Medical Physicists, or the joint session with WHO, PAHO & ALFIM on the access of health technologies in developing countries, or the session organized with the IRPA on Challenges for joint activities of IOMP and IRPA in radiation protection, actually a topic in the public focus.

So, the entire program of the conference is a well-balanced transformation of the IOMP Mission Statement, *to advance medical physics practice worldwide by disseminating scientific and technical information, fostering the educational and professional development of medical physics and promoting the highest quality medical services for patients.* In particular, this conference reflects compellingly the priorities of the way forward of IOMP as emphasized in the vision of our organization developed for the term 2009 – 2012 aiming to in disseminate medical physics globally.

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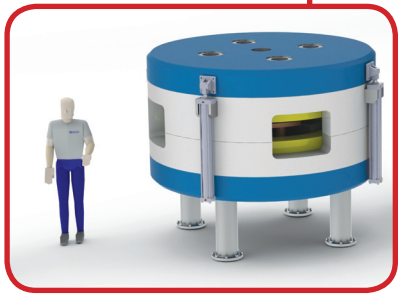

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Developing Countries

Medical Physics globally, what does that mean in a world with so obvious disparities in the access on medical devices with proven benefits for the patient? How can we balance the uneven distribution of equipment and skills? What are the national constraints and characteristics we have to take into account? Did we set the right long term agenda? Who are the drivers of developments in Medical Physics? How can we influence their agendas? How can we counter the increasing problem of understaffing with qualified medical physicists? These questions challenge the whole medical physics community, in particular the IOMP and within its limited financial resources IOMP has to find adequate answers. Our capital which we can invest to the benefit of the developing countries is primarily the expertise of about 18 000 medical physicists. We can provide professional advice, establish adequate structures for instance for education & training, give policy guidance to health authorities, actively contribute when developing standards in our field of competence. Rather than competing with other large bodies we should seek ways to cooperate and bundle forces.

Hence, I see one of the major challenges for the IOMP is to form alliances with internationally operating organizations. I am particularly grateful to the close cooperation with the WHO when we signed as a first step a MoU last year. We are rather optimistic to achieve the status an NGO soon. Just one example for the fruitful partnership is the participation in the WHO initiative of the Global Forum on Medical Devices last year in Bangkok. Another most promising activity of IOMP is the cooperation with the IAEA where we have been invited to participate in programs like the AGaRT (Advisory Group on Affordable Radiation Therapy) or PACT (Program of Action for Cancer Therapy). Finally I want to mention our most successful partnering action with the ILO in Geneva resulting in the international recognition of the profession of the Medical Physicist. This is a most important step IOMP was fighting 15 years for. This enhances our efforts when establishing infrastructures including education & training programs particularly in the developing countries, because the ILO acknowledges the Medical Physicists as a Health Professional.

Emergencies

To signal the increasing importance of radiation protection as one of the major domains of the Medical Physicist the IOMP initiated a formal collaboration with the IRPA. The recent nuclear power plant accident of Fukushima gives reason to consider a stronger involvement of our profession in emergencies even beyond our traditional medical environment. As part of their professional career many Medical Physicists have acquired competence in the field of nuclear medicine and hence may be recruited to support emergency teams, for instance in dosimetry, contamination measurements and dose assessment.

Closing

The IOMP as one of the stakeholders in health care shall adopt its role and responsibility, in particular in the developing world. I would like to close by quoting from the summary of the WHO Global Forum meeting 2010 in Bangkok:

"*In order to increase health coverage, have better health services, and best assist populations in need, it is necessary to make all stakeholders aware of the importance of decisions relating to the design, choice and use of appropriate, safe and effective medical devices, and to act accordingly. All stakeholders, whoever and wherever they are, are accountable for the success or failure of access to appropriate medical devices – a fundamental factor in improving the health of populations."*

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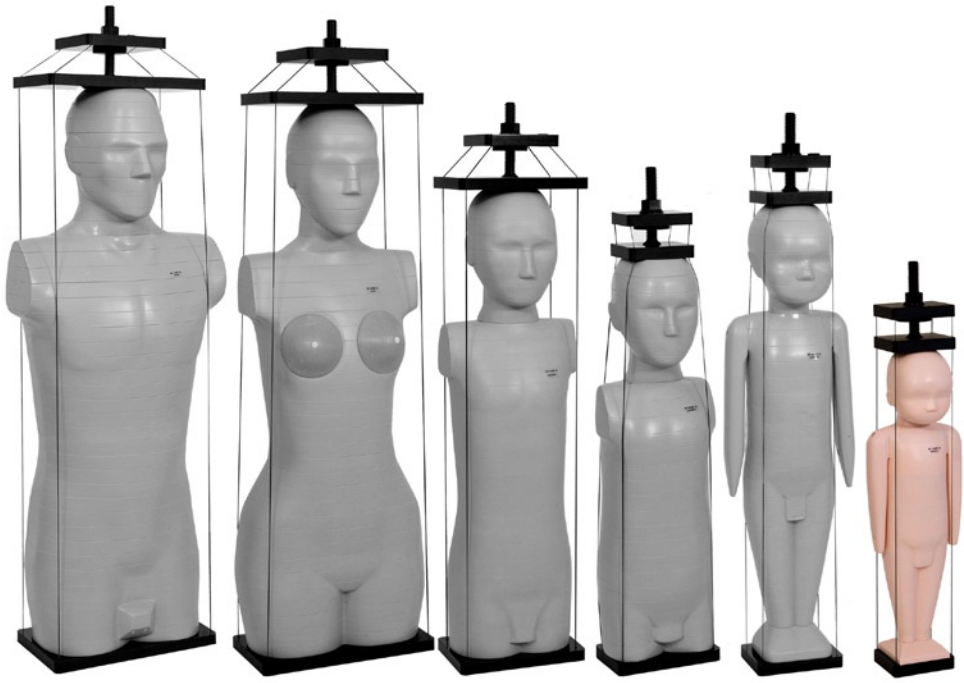

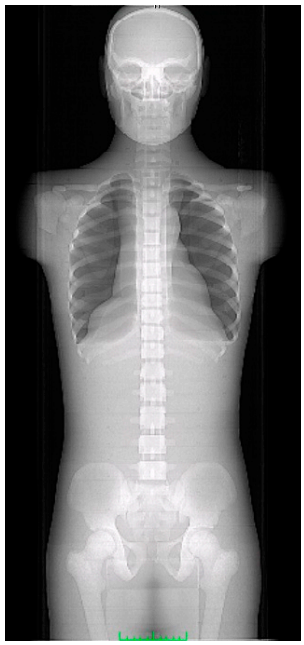

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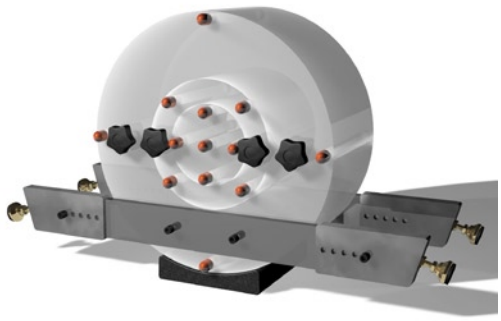

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MEDICAL PHYSICS EDUCATION in the CONTEXT of ADVANCED MEDICAL EDUCATION

As medical physicists struggle with the details of their education we often forget that we are part of the larger world of medical physics education and that many of the forces that effect advanced medical education also ultimately effect medical physics education. Thus I would strongly recommend to you the work of the Josiah Macy, Jr. Foundation.

http://www.josiahmacyfoundation.org/

This foundation does much excellent work in the area of medical education and many of their reports should be influencing our thinking about medical physics education. In particular I would like to recommend their recent report "Conference Summary: Ensuring an Effective Physician Workforce for the United States

http://josiahmacyfoundation.org/publications/publication/conference-summary-ensuring-an-effective-physician-workforce-for-the-united

While a publication focused on physician supply in the US may not, at first glance, seem appropriate to members of the IOMP there are many commonalities that we should consider. First the forces that are driving a shortage are universal and apply to medical physics as well as physician supply. They include an aging population and an explosion of medical technology.

Many of the recommendations in the report are relevant and fascinating. For example the foundation recommends ending the fixed length for training. Their recommendation should be continued until competency is reached. The advantages of this approach are obvious but he difficulties seem almost impossible to overcame. A competence-based period of training would allow the fully competent physicist to begin practice sooner. This would reduce costs and increase the supply. Extending the training period for those who have not achieved competence would keep these people from going into practice before they are ready.

We all need to think about issues like this. I strongly recommend that you consider some of these possibilities.

Focus on Education

This is to remind you that eMPW focuses on medical physics education. Medical physicists have to educate many people about medical physics

- **Medical Physicists**
- **Physicians**
- **Ancillary Personnel**
- **Government Regulators**
- **Members of the Public**

We have to do this with limitations on our time and resources. eMPW hopes to serve as a way to communicate about our success and failures. It will touch the wide spectrum of education around the world and especially innovations of importance. I invite each and every one of you to send me brief articles about education and announcements about conferences about education.

Deadlines for Future Issues

November 10, 2011

May 10, 2012

November 10, 2012

Please send material to:

Freyd@musc.edu

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- **How do you educate individuals in your country?**
- **What innovations have you come up with?**
- **What changes have been made in the educational requirements?**

We are interested in everyone's perspective. I am especially interested in contributions from students about their educational experiences.

G. Donald Frey

Editor – eMPW

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An Inside Look at the Trials and Tribulations of Medical Physics and Radiation Therapy in Africa:
A Case Study at Institut Curie de L'Hopital Aristide Le Dantec in Dakar, Senegal

Located in Dakar, Senegal, Institut Curie de L'Hopital Aristide Le Dantec is one of the only radiation oncology centers on the northwest coast of Africa. Because of the need for a three step approach to cancer treatment (surgery, chemotherapy, and radiation therapy), the radiation oncology department in Dakar, Senegal treats patients from all over Senegal and ten surrounding countries. They do all of this now with one Co-60 treatment device, two radiation oncologists, two radiation oncology medical physicists, and four radiation technologists. I had the opportunity to spend a number of months at this hospital working as a volunteer medical physicist. As I first began working, I had many plans to improve procedure in the department as well as the sophistication of use of the instruments. But as time passed, I realized that the severe lack of equipment and of functioning equipment placed equally severe restrictions on the amount of work and improvements that I could implement. Immersed in the difficulties of medicine in a developing country, I was quick to realize my naiveté regarding the situation as I was initially introduced to it when I was practicing medical physics in the United States. As I searched for solutions to the many problems I faced, and as I tried to overcome the overwhelming obstacles that faced me, I was touched by the words of the medical physicist that worked there: "Every night I go to sleep and I pray that I do not go to hell for the things that I do at the hospital. We work with what we have and hope that what we give the patients is better than if they had nothing at all. But sometimes I am not sure."

Despite the dedication of the radiation oncology staff, there are many difficulties with radiation therapy in Senegal. First is the lack of equipment and functioning equipment. In order to create the necessary changes in procedure and sophistication of treatments, the department needs to have a certain level of functioning equipment. This includes everything from the treatment delivering machines to the equipment used to maintain those machines, as well as everything in between. Even things as small as robes and sheets for the patients or latex gloves for the therapists are in short supply. The simplest of tasks that go unnoticed in the United States are an obstacle every day with every patient in Senegal. A sad but typical example of patient treatment is as follows: A woman lies on the simulation table to be prepared for a radiation treatment of her breast. She lies fully naked on the treatment table, using her own clothes to act as a sheet, while the technicians and physicist decide if they should use gloves to handle her or not. An x-ray is taken to see if the treatment parameters will be acceptable. While the patient continues to lie on the table, the physicist walks to the opposite end of the hospital to develop the film, and then shows it to

the radiation oncologist for approval. The radiation oncologist wants to make a change, but rather than make the necessary changes in setup and then to film the patient again to verify everything is correct, they simply adjust the patient on the table according to visual assessment rather than radiological verification. This is to conserve their time and their film, neither of which is plentiful.

It is necessary for the hospital to obtain a minimum level of working equipment and supplies. But it is equally necessary for the hospital to obtain the necessary guidance to ensure the equipment is set up, used, and maintained properly. A lot of equipment was either not installed correctly from day one or is stored in closets, broken and with parts missing. At the AAPM conference in Anaheim, CA two years ago, the physicist who works for Institut Curie de L'Hopital Aristide Le Dantec gave a presentation on the conditions at the hospital at that time. She showed pictures of a functioning treatment planning system, as well as a Varian Ximatron simulator that was being installed at that time. When I arrived, the treatment planning system could do no more than a basic, open field hand calculation, no more sophisticated than an excel file that could be created in a matter of hours and minutes. The simulator, which the physicist was so excited about two years prior, could do little more than to store an image temporarily on the screen directly after taking an x-ray: the images could not be saved nor transferred; the geometry and associated parameters were not attached to the image, and thus had to be written down manually; and the image could not be printed. As I participated in clinical duties, and as I searched for ways that I could assist, I quickly realized the conditions were worse than I had imagined. The severe lack of functioning equipment and instruments left me frustrated and sad, because I had a body of valuable knowledge to bestow, but nothing to show for it: no instruments on which to demonstrate physics principles, clinical setup, or QA techniques; no technology to improve upon basic clinical procedures; and no equipment to implement in order to raise the standard of care above the level of basic functioning. They have a block cutter that is missing the melting pot, as well as cerrobend and polystyrene. Therefore, shielding is accomplished by arranging five pieces of lead on a tray until the shadows look adequate on the patient (these are not even simple geometric shapes that could fit together properly in various arrangements with no gap, but instead random asymmetric lumps of lead). The Co-60 machine was calibrated based on the direct mathematical relationship between activity and dose to water at distance and depth. The geometry of the machine and source, along with their associated attenuation and scatter characteristics were not taken into account for two reasons: first, they have no water tank, solid water, or even a working ion chamber and electrometer to calibrate dose themselves; and second, the calibration papers from the previous owner of the machine were lost or thrown away most likely because of the lack of understanding of the importance that went along with those papers: the fact that there is a direct,

measureable relationship between that particular machine and its associated source activity with a dose to water at distance and depth. Instead, I was left to measure output with an MD Anderson TLD, and found that the calibrated output is off by more than 8%. Yet there is nothing at this moment that can be done to correct this. It is essential that any equipment that is to be used at the hospital is set up properly and that the individuals that will be using that technology are trained on its use. Otherwise, equipment designed to provide medical help to patients affected by cancer can actually cause more harm than good.

The second obstacle to overcome in radiation therapy in Senegal is the overall knowledge and experience of all the individuals that make up the working department. There are no apparent regulatory bodies to determine a standard level of care (A few weeks before I arrived, a patient was severely burned due to improper setup on repeated fractions. This was due to the fact that an undertrained therapist was delivering the treatments while the primary therapist was on vacation.). There is no competition to drive excellence in care. Because of their isolation, there are no colleagues, experts in the field, or other experienced individuals to ask for assistance or guidance in theory, procedure, troubleshooting, or general knowledge about the field. There is no assistance from anywhere but from within themselves. Though this is a major problem right now, which could lead to mistreatments in many different areas, it is actually an area where drastic improvements may be implemented. Medicine in Senegal is a blank canvas, one where a proper framework of education and continuing education, license, and regulation can be established according to the professional guidance of the American Association of Physicists in Medicine, the International Organization of Medical Physics, or other experienced professional medical physics groups that may have an interest in radiation therapy in Africa. First, adequate training needs to be performed for all individuals involved, with a standard level of care and knowledge that has to be attained. Second, proper procedure needs to be implemented, from patient prescription to patient setup and planning, to billing and cost gain benefit. Third, a framework of continued support needs to be constructed, both to ensure continued proper patient care, as well as to support continued education and modernization of patient treatment.

The lack of appropriate infrastructure is also a problem. Areas that this affect include a lack of adequate national and hospital infrastructure, lack of monetary support, and an unnecessary addition of bureaucratic red tape and bribery that lead to the prevention of progress. Electricity is not a constant in the city, which will require expensive generators to allow the use of modern equipment as well as simple necessities such as internet and communication. Little money is allotted to the radiation oncology department, and even money that belongs to the department seldom reaches it in its entirety.

In addition to all of the obstacles already mentioned, which need to be overcome in order to treat cancer patients most effectively, there is a more fundamental problem that prevents the cure of a large number of people affected by this medical problem. This obstacle is the lack of early diagnosis. There are three major components to this issue: first is the lack of public knowledge about cancer and the need for preventative medicine (such as mammograms, self-breast or self-testicular exams, colonoscopies, etc.); second is the fear associated with doctors and their associated diagnoses; and

third is the lack of technology and knowledge that lead to the misdiagnoses of patients at early stage. No amount of physics support, knowledge, or equipment can resolve the issue that a patient that is palliative in a developed country will undoubtedly be palliative in a developing country. Of the approximately 450 GYN cases treated over the past year at Institut Curie de L'Hopital Aristide Le Dantec, close to 90 percent of them were palliative. This number would be considered unreasonable and astonishing in the USA. There are a number of solutions to increase the probability for early diagnosis of cancer in Senegal, though the effects will not be seen for some time. A campaign for public awareness is the first priority. On a closely related topic, once aware of the importance for early detection in cancer treatment, it is important to sway public opinion into realizing that cancer is not a shameful medical diagnosis, but a condition that affects many people, and can be treated. Both of these solutions require a dedicated public speaking campaign targeting cancer awareness and openness. The current medical physicist has already begun speaking on the subject on television. Lastly, it is important to improve the overall conditions of healthcare in Senegal. In particular, it is important to improve the diagnostic abilities of general practice doctors nationwide. This would take a similar effort as is needed to improve the radiation oncology department itself: an increase in technology, equipment, knowledge, and support from educated and experienced individuals from around the world.

There is a desire from the employees at Institut Curie de L'Hopital Aristide Le Dantec to give proper cancer treatments to the people of a region lacking in economic development and prosperity. In a country full of so much beauty and kindness and an overwhelming air of happiness and appreciation for life, the Senegalese people deserve the opportunity to support themselves with adequate medical care, and thus preserve life itself. But this will never be accomplished until first they are given support from the outside.

18th International Conference on Medical Physics, Porto Alegre, Brazil, April 2011

Report by Ana Maria Marques, ICMP 2011 President,

Cari Borrás, Science Committee Chair

and Paulo Costa, Educational and Professional Committee Chair

The International Organization for Medical Physics (IOMP) sponsors an International Conference on Medical Physics (ICMP) approximately every 18 months to promote medical physics worldwide. It aims to introduce the latest innovations in imaging, treatment and safety in theoretical and applied conventional and non-conventional medical physics subjects. The last ICMP (ICMP 2011) took place in Porto Alegre, Brazil, April 17-20, 2011, organized by the IOMP, the Latin American Association of Medical Physics (ALFIM) and the Brazilian Association of Medical Physics (ABFM), and it was hosted by the Physics School of the Pontifical Catholic University of Rio Grande do Sul. Its motto was "Science and Technology for Health for All".

Two additional events, with selected overlapping sessions, were held during the ICMP 2011: the XVI Brazilian Congress of Medical Physics (XVI CBFM) and the V Instrumentation and Medical Imaging Symposium (V SIIM), both traditional Brazilian events with medical physicists, physicians and biomedical engineers. Prior to the Conference, there were two days of courses and workshops. The details can be accessed at: http://www.pucrs.br/fisica/icmp2011/.

The events were attended by more than 500 participants from 34 countries: mostly from South America, mainly Brazil, as Figures 1 and 2 show.

Figure 1. Attendees of ICMP2011 by Region

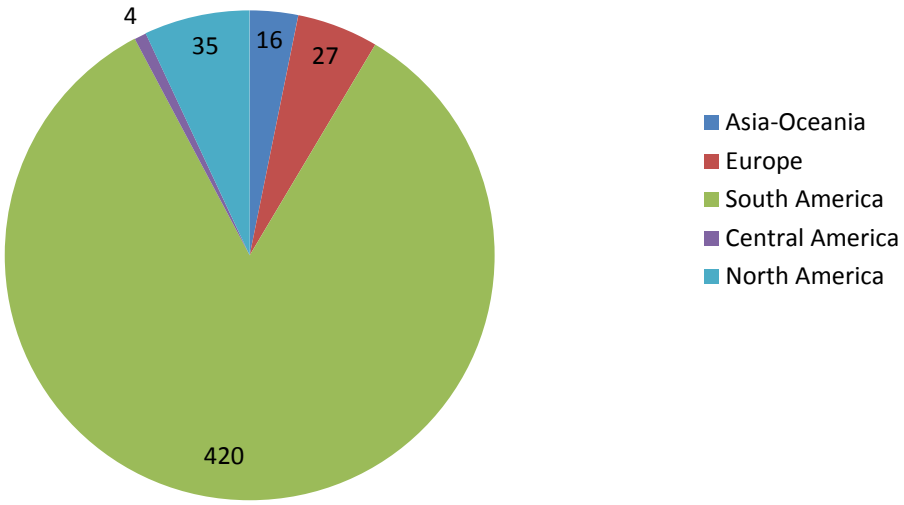
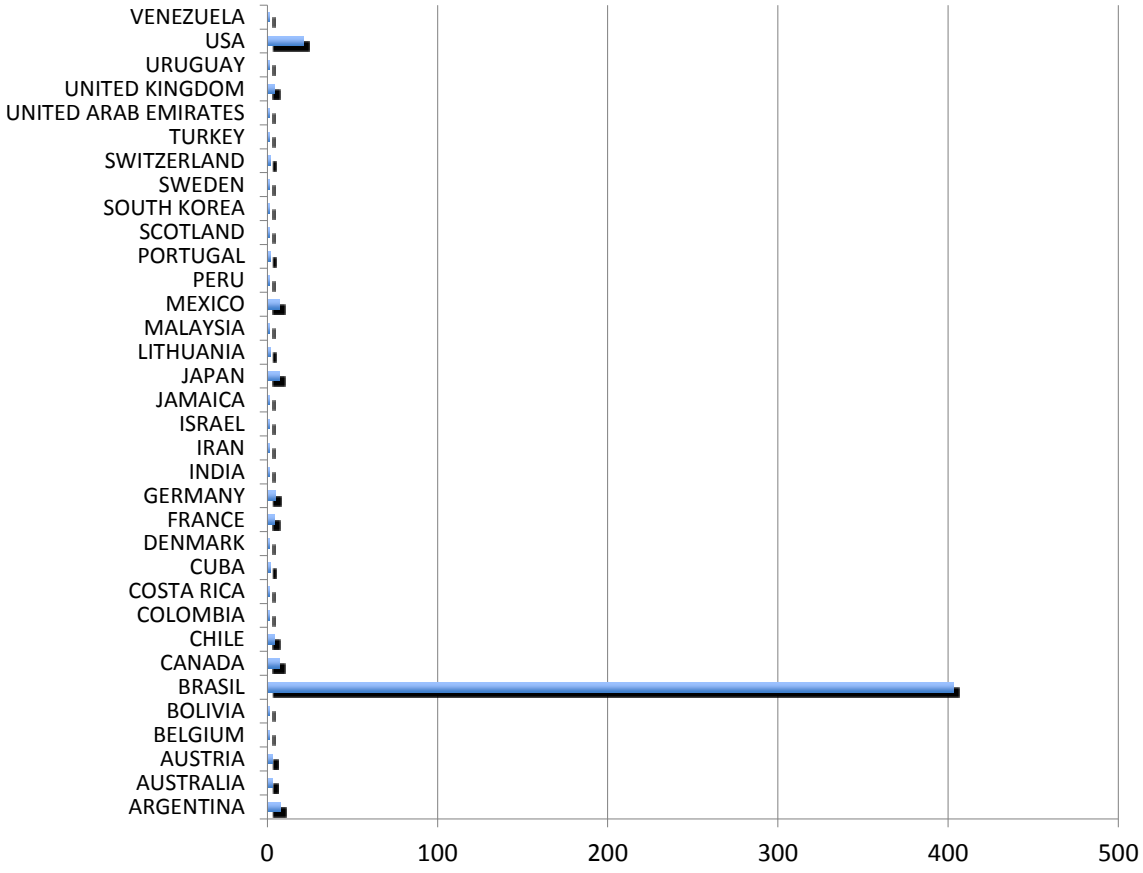


Figure 2. Nationality of the Attendees of ICMP 2011



The Program of the Conference included 6 plenary sessions, 34 proffered scientific sessions led by 34 keynote speakers plus some additional sessions composed of oral papers only, 3 educational and professional sessions, two special IOMP sessions and 5 round tables. The speakers for the sessions and the round table moderators were invited from Argentina (3), Australia (4), Belgium (1), Brazil (4), Canada (2), Denmark (1), France (1), Germany (2), Malaysia (1), Mexico (1), Sweden (1), Switzerland (1), the United Arab Emirates (1), the United Kingdom (3), and the United States (16), and from three international organizations: the International Atomic Energy Agency (3), the Pan American Health Organization (1) and the World Health Organization (1). Prior to the Conference, there were 6 courses and one Workshop. The course lecturers were invited from Brazil (6), Canada (2), Germany (1), Portugal (1) and the United States (13). The Workshop ("Defining the medical imaging requirements for a health station") was the Second Workshop of the Health Technology Task Group (HTTG) of the International Union for Physical and Engineering Sciences in Medicine (IUPESM). It was moderated by the IUPESM President (Australia) and the HTTG Co-Chair (USA).

The Plenary speakers and their topics are shown in Figure 3.

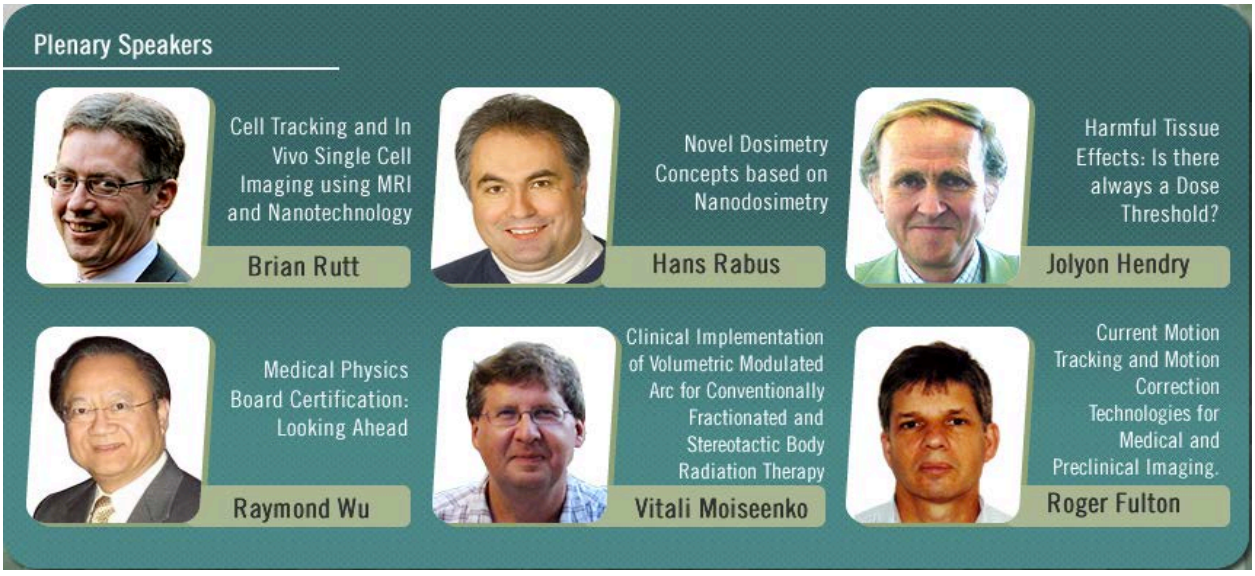


Figure 3. ICMP 2011 Plenary Speakers

For the proffered sessions, 307 submitted abstracts were accepted; they were assigned to several tracks: 95 of them were accepted as oral presentations and 212 as posters. The most popular tracks, as measured by the number of accepted abstracts, were "Radiation Dosimetry: Algorithms, instrumentation and protocols" (73 abstracts), "External Beam Radiotherapy" (47 abstracts), "Radiation Biology and Radiation Protection" (43 abstracts) and "X-ray Imaging" (34 abstracts). Figure 4 shows the details.

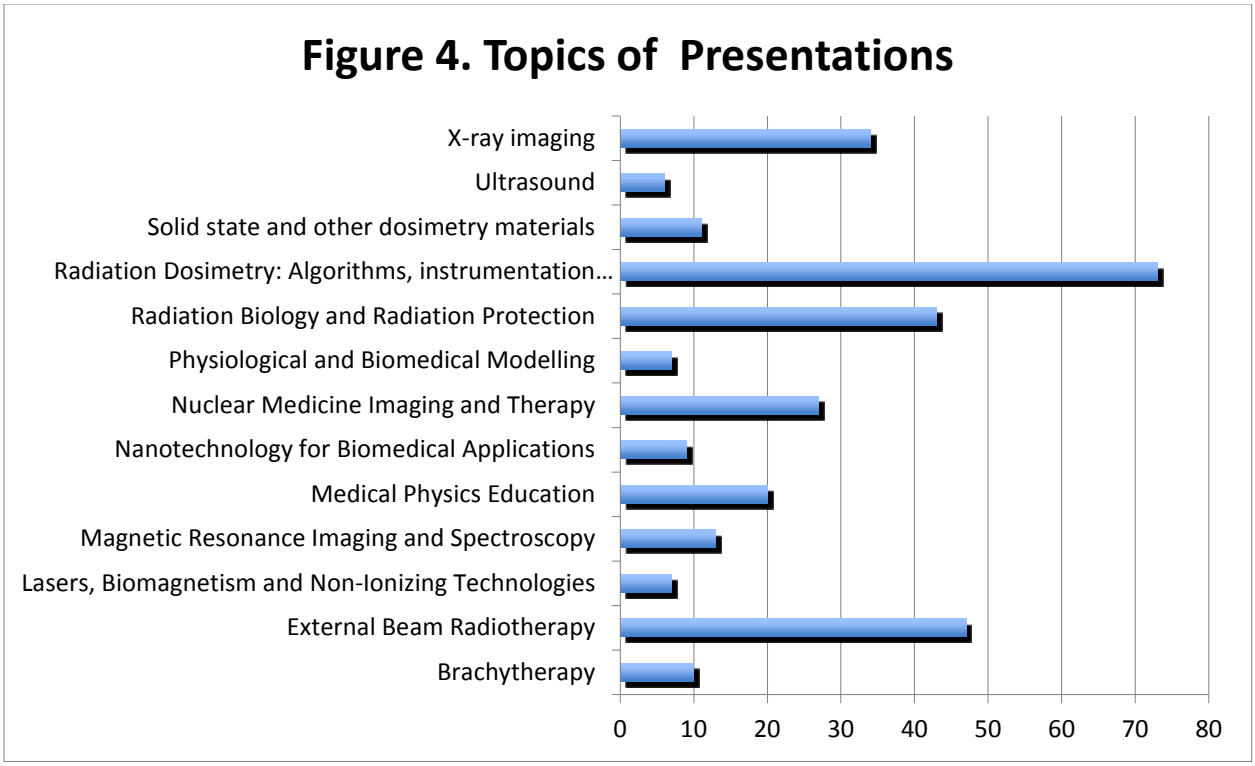


Table 1 lists the Oral Sessions and their keynote speaker, when there was one.

Table 1. Oral Scientific Sessions

SS1-MO-A - Stereotactic Radiosurgery and Stereotactic Body Radiation Therapy. Keynote Speaker: Timothy D. Solberg

SS1-MO-B - Image Quality and Dose in Computed Tomography. Keynote Speaker: John M. Boone

SS1-MO-D - Functional Magnetic Resonance Imaging with High and Ultrahigh Magnetic Fields. Keynote Speaker: Kamil Ugurbil, Bashar Issa

SS2-MO-A - Quality Assurance in Radiation Therapy. Keynote Speaker: David Followill

SS2-MO-C - Nuclear Medicine Imaging. Keynote Speaker: Cecil Chow Robilotta

SS2-MO-D - Radiation Biology and Physiological Modeling.

SS3-MO-A - Intensity Modulated Radiation Therapy. Keynote Speaker: Patrick F. Cadman

SS3-MO-B - Computed Tomography Dosimetry. Keynote Speaker: J. Anthony Seibert

SS3-MO-C - Quality Assurance in Nuclear Medicine.

SS4-MO-A - Symposium on Image Guided Radiation Therapy. Keynote Speaker: Habib Zaidi

SS4-MO-B - Radiation Protection Programs. Keynote Speaker: Madan M. Rehani

SS4-MO-C - Film Dosimetry for Radiation Therapy.

SS4-MO-D - Magnetic Resonance Imaging and Nanoparticles as Contrast Agents. Keynote Speaker: Bashar Issa

SS1-TU-A - Dosimetry and Quality Assurance for New Radiation Therapy Modalities. Keynote Speaker : Penelope J. Allisy-Roberts, Cari Borrás

SS1-TU-C - New Dosimetry Materials and Technologies in Medical Applications. Keynote Speaker: Oswaldo Baffa

SS1-TU-D - Ultrasound Imaging. Keynote Speaker: Paul L. Carson

SS1-TU-E - Experiences in Education and Training in Medical Physics.

SS2-TU-A - Symposium on New Radiation Technologies. Keynote Speakers: Barry J Allen, Harald Paganetti, Feras Ramadan Afaneh, William Hendee

SS2-TU-B - Computed Radiography, Digital Radiology and Mathematical Image Manipulation. Keynote Speaker: Kwan-Hoong Ng

SS2-TU-C - Internal Dosimetry. Keynote Speaker: Michael G. Stabin

SS2-TU-D - Laser Applications in Medicine and Effects of Magnetic Fields. Keynote Speaker: Elisabeth Mateus Yoshimura

SS2-TU-E - Status and Future Development of Education and Training in Medical Physics and Engineering. Keynote Speaker: Slavik Tabakov

SS4-TU-A - New Dosimetry Techniques for Brachytherapy and Total Body Irradiation. Keynote Speaker: Larry DeWerd

SS4-TU-B - Radiation Protection Optimization for Adults and Children undergoing Radiological Procedures. Keynote Speaker: John Le Heron

SS4-TU-D - Innovations in Biological Imaging. Keynote Speaker: Fridtjof Nüsslin

SS1-WE-A - Novel Dosimetry Systems for Radiation Therapy. Keynote Speaker: Geoffrey S. Ibbott

SS1-WE-B - Patient Dose Management in Radiology. Keynote Speaker: Colin J. Martin

SS1-WE-C - Monte Carlo Modeling.

SS1-WE-D - Nanotechnology for Biomedical Applications.

SS2-WE-A - Treatment Planning for External Beam Therapy including Intraoperative Radiation Therapy. Keynote Speaker: Milan Tomsej

SS2-WE-C - Instrumentation for Dose and Image Quality Assessment in Diagnostic Radiology. Keynote Speaker: Donald McLean

SS2-WE-E - Tomosynthesis, Digital Mammography and Dental Cone-Beam CT. Keynote Speaker: Anders Tingberg

SS3-WE-A - Brachytherapy Treatment Planning and Clinical Outcome. Keynote Speaker: Victor Bourel

SS3-WE-B - Patient Doses in Interventional Radiology. Keynote Speaker: Anna Benini

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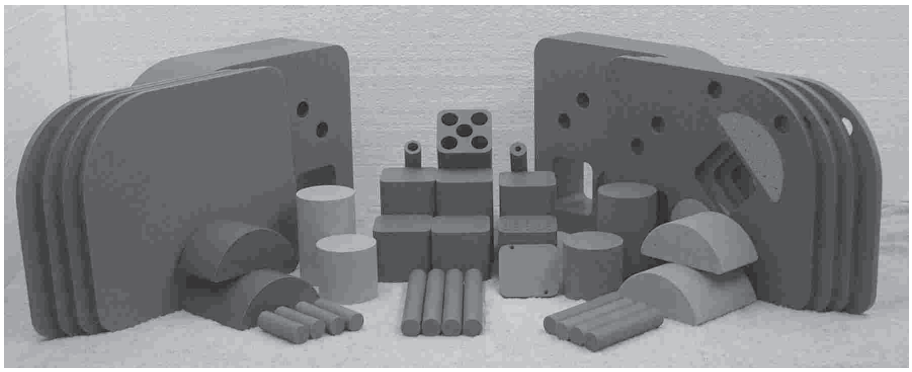
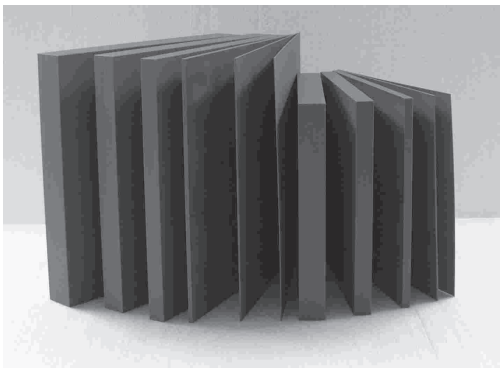


Custom made phantom



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Of the two IOMP Special Sessions, one was held with the International Radiation Protection Association (IRPA) on the subject: "Interfacing matters between IRPA and IOMP". It was chaired by Paulo Costa, and the speakers were: Fridtjof Nüsslin (IOMP), Kenneth R. Kase (IRPA), Robert Corbett (IRPA) and Cari Borrás (IOMP).

The second IOMP Special Session was held with the World Health Organization (WHO), ALFIM and the Pan American Health Organization (PAHO) on "Health Technologies - More than a Niche for Medical Physicists". It was chaired by Fridtjof Nüsslin (IOMP) and Ruzica Maksimovic (WHO). The speakers were: Pablo Jimenez (PAHO), Simone Kodlulovich (ALFIM) and Cari Borrás (IOMP).

The topics of the Round Tables with their moderators and speakers are listed in Table 2.

Table 2. ICMP 2011 Round Tables

RT1-A-Revised International Basic Safety Standards for Protection against Ionization Radiation and for the Safety of Radiation Sources (BSS).

Moderator: Pablo Jimenez.

Speakers: John Le Heron; Ruzica Maksimovic.

RT2-B-International Collaboration Within the United States National Cancer Institute Sponsored Clinical Trials: The Need for Radiotherapy Quality Assurance.

Moderator: David S. Followill.

Speakers: Milan Tomsej; Tomas Kron; Anna Maria C. Araújo.

RT3-C-New Advances in Nuclear Medicine.

Moderator: Cecil Robilotta.

Speakers: Barry Allen; Habib Zaidi; Roger Fulton; Osama Mawlawi.

RT4-D-Biological Effects of Non Ionizing Radiation: Ultraviolet Rays, Extremely Low Frequency, Radio-frequency and Magnetic Fields in MRI/MRS.

Moderator: Kwan Hoong Ng.

Speakers: Emico Okuno; Jorge Skvarca; Alessandro Mazzola.

RT5-E-Certification of Medical Physicists.

Chair: Raymond Wu.

Speakers: Rena Lee; Tae Suk Suh; Shigekazu Fukuda; María-Ester Brandan; Valdemar Z. Gonzalez.

The topics of the educational and professional sessions with their speakers are listed in Table 3.

Table 3. ICMP 2011 Educational and Professional Sessions

EP1-MO-E - Radiation Safety in Pediatric Radiology: what we can do as a Medical Physicist? Speaker: Charles Willis.

EP2-MO-E-Innovations in Medical Physics Education. Speakers: William Hendee, Slavik Tabakov.

EP3-WE-E - Professional Status of the Medical Physicists in Latin America and the Caribbean. Speakers: Cecilia Haddad, Maria Ester Brandan, Graciela Velez.

The six pre-conference courses and their organizers and chairs are listed in table 4.

Table 4. ICMP 2011 Pre-Conference Courses

C1-Modern Radiotherapy: Mitigating Risk . Chair: Yakov Pipman

C2 - Adapting Traditional Clinical Medical Physics to Digital Radiography. Chair: Charles Willis

C3 - PET/CT Acceptance Testing and Quality Assurance and Quantitative PET/CT Imaging. Chairs: Osama Mawlawi and Cecil Robilotta

C4 - Recent Advances in Radiation Therapy: Planning, Delivery and Methods of QA. Chair: Laura Natal Rodrigues

C5 - Dose and image quality assessment in Computed Tomography. Chair: Denise Nersissian.

C6 - Atualização para Técnicos em Radioterapia (in Portuguese). Chair: Anna Maria C. Araujo

All the ICMP oral sessions, the Pre-Conference courses and Workshops were CAMPEP-Accredited. The only activities that were not accredited were the

poster sessions and the Symposium of Instrumentation and Medical Imaging (SIIM) event, which was not an IOMP-event.

In the commercial exhibits, 16 companies from the health care and medical physics sectors exhibited their products; some (Varian and Elekta) also offered dedicated lunch sessions. Exhibitors included Brainlab, Elekta, IBA, Siemens, Springer, Varian, and many others. An overall of 474 m² floor space was taken up by the exhibits. Figure 5 shows the ICMP exhibitors at the PUCRS Events Center.

Figure 5. Exhibitors at the ICMP 2011. (Source: Fotos Rocha)

Figure 6 shows the ICMP 2011 Opening Ceremony, Figure 7 shows the Closing Ceremony and Figure 8 shows Drs. Costa and Borrás during the Closing Ceremony giving an award to a young investigator for her innovative research paper.

Figure 6. ICMP 2011 Opening Ceremony. (Source: PUCRS/Gilson Oliveira)

Figure 7. ICMP 2011 Closing Ceremony. (Source: Fotos Rocha)

Figure 8. Paulo Costa (left) and Cari Borrás (right) with the young investigator Zélia Soares Macedo (center) receiving an award. (Source: Cecil Chow Robilotta)

To conclude, ICMP 2011 was a very productive event for the medical physics community scientifically, professionally and socially. Participants were able to meet international colleagues, listen to the most authoritative scientific reviews given by leading scientists in medical physics, and engage in social

activities. The meeting was successful mainly because it was the result of a significant effort by the distinguished guest speakers, the members of all the ICMP 2011 committees, the boards of the national and international organizations involved, and the governmental and commercial sponsors.
