

Motto: "Make Progress, Face Challenges, Get Solutions"



World Congress on Medical Physics & Biomedical Engineering

June 3–8, 2018
Prague, Czech Republic



Programme



2



World Congress on Medical Physics
& Biomedical Engineering

June 3-8, 2018
Prague, Czech Republic



Contents

Sponsors & Partners	4
Auspices	5
Welcome Addresses	
● Co-Chairs of the Congress Organizing Committee	6
● President IUPESM	8
● President IOMP	9
● President IFMBE	10
Hosts	11
Floor Plans	15
Scientific Programme Overview	17
IUPESM / IFMBE / IOMP Meetings	27
Social Events	31
Lunch Symposium	33
Congress Information	34
Exhibition	36
Company Profiles	38

SPONSORS & PARTNERS

Supported by



Gold Sponsors



varian

Silver Sponsor

RaySearch
Laboratories



AUSPICES

The 2018 World Congress on Medical Physics and Biomedical Engineering
will be organized in cooperation with
the International Atomic Energy Agency (IAEA)



IAEA
International Atomic Energy Agency

is held under the Auspices of Dana Drábová,
President of the State Office for Nuclear Safety (SÚJB)



is held under the Auspices of Štěpán Svačina,
President of Czech Medical Association Jan Evangelista Purkyně



is held under the Auspices of the International
Union of Pure and Applied Physics (IUPAP) and conforms to the IUPAP policies



Collaborative Institutions

The Czech Technical University in Prague, Faculty of Nuclear Sciences
and Physical Engineering and Czech Institute of Informatics, Robotics
and Cybernetics, Czech Technical University in Prague



Welcome Addresses

Welcome Message by the Co-Chairs of the Congress Organizing Committee

Dear colleagues,

It is a great pleasure and an honour for the Czech Society for Biomedical Engineering and Medical Informatics and for the Czech Association of Medical Physicists to be the host societies and organizers of the IUPESM 2018 World Congress on Medical Physics and Biomedical Engineering. The Congress will be held in Prague, the capital of the Czech Republic, at the beginning of June 2018. The Congress is represented by the Congress Organizing Committee (COC) and is organized in close collaboration with the international societies IUPESM, IFMBE and IOMP represented by the Congress Coordinating Committee (CCC). The Congress is held under the auspices of the International Atomic Energy Agency (IAEA).

This triennially organized joint meeting of medical physicists, biomedical engineers and related health care professionals is a unique opportunity to liaise with professional colleagues from all over the world, to learn and share knowledge, and to discuss the latest research outcomes and technological advancements as well as new ideas in medical physics and in biomedical engineering.

The Congress events will take the form of scientific sessions, plenary sessions, keynote lectures, accredited education lectures, special sessions and e-posters. Besides the purely scientific and technological topics, the IUPESM 2018 World Congress will also focus on other aspects of our two professions' involvement in health care, such as education and training; accreditation and certification; health technology assessment, and patient safety. The scientific meetings will be supplemented with exhibitions and presentations of the manufacturers, vendors, innovators and publishers, both local and global.

It is not possible to individually name all of the organizations and individuals who contributed to the success of the Congress here, but let us mention at least two cornerstones of the internal structure of the Congress – the participants and the organizing bodies. The IUPESM 2018 World Congress could never have come about without its almost 2000 registered participants, both active and passive. Our great personal thanks go to each one of these colleagues individually. As to the organizing bodies, the COC expresses its sincere gratitude to the presidents and to all officers of the three international professional societies represented by the CCC for their intense and continuing support and collaboration during the last two years. Great and cordial thanks go to the chairs and members of all Congress committees, with the Scientific Committee at the forefront. There are hundreds of other people who deserve our thanks as well – our colleagues from the NMO boards all over the world, the representatives and staff of the WHO, IAEA and IUPAP, the specialists from the PCO Guarant International, our colleagues from the local collaborating institutions, and many others who hopefully forgive us for not mentioning them here by name.

Dear colleagues, we truly hope that the IUPESM 2018 World Congress on Medical Physics and Biomedical Engineering in Prague will become a memorable event both professionally and socially for all participants and we are very much looking forward to meeting you in person.

On behalf of the COC,



Jaromír Cmíral
COC Co-chair (Biomedical Engineering)



Libor Judas
COC Co-chair (Medical Physics)

Welcome Message by the President of IUPESM

Dear Colleagues and Friends,

It is my great pleasure and honour to welcoming you all to this World Congress on Medical Physics and Biomedical Engineering 2018.

This Congress brings together medical physicists, biomedical engineers and other professionals in related fields from all over the world to interact and exchange of ideas and sharing of knowledge, experience, and research findings. Amongst the participants are delegates representing the national member organizations of the IOMP and IFMBE from more than 87 countries and representatives from international organizations including IAEA, WHO and UNSCEAR. A key objective of the Congress is to promote advances in science and technology for the benefit of human health and contribute to the evolution of medicine. The Congress provides a unique platform for multidisciplinary discussions on scientific and academic issues from different perspectives and to foster interdisciplinary professional collaborations. The event creates the synergy and stimulant for participants in generation of new concepts and innovations in medicine.

On behalf of IUPESM, I would like to thank the Czech Association of Medical Physicists, Czech Society for Biomedical Engineering and Medical Informatics and the chairs and members of all the scientific and organizing committees in putting up an excellent congress and to congratulate them for their huge success in the event. I would also like to thank all the session chairs, speakers and presenters for their contributions in this Congress.

Last but not least, I wish all the participants a very fruitful congress and an enjoyable stay in the beautiful city of Prague.



Kin Yin Cheung
IUPESM President

Welcome Message by the President of IOMP

Dear Colleagues from all over the world,

It is a great pleasure and honour for me to welcome you on behalf of the International Organization for Medical Physics (IOMP) at the World Congress on Medical Physics and Biomedical Engineering, 2018.

Our tri-annual World Congress is now a well-established tradition, which I am sure will attract many new scientific presentations and professional/educational activities of medical physicists and biomedical engineers, showing the impact of our professions to contemporary medicine. I am using this opportunity to congratulate our hosts, the colleagues from Czechia, as well as the Scientific and other Congress Committees, who did a great job for paving the success of the Congress.

Today IOMP unites almost all Medical Physics Societies in the world. Our profession is one of the corner stones of healthcare, underpinning important parts of medicine such as radiotherapy treatment, medical imaging, radiation safety and others. IOMP worked very hard, together with IUPESM and IFMBE, for the recognition of the occupations “medical physicist” and “biomedical engineer” by the International Labour Organisation. Today IOMP is proud to announce that in the past 20 years our professional, educational and e-learning activities were pivotal for more than doubling of medical physicists globally – starting in 1965 with a total of 6.000 medical physicists in the world, growing to 12.000 in 1995, currently surpassing 27.000 and aiming to triple this figure in the next 20 years. Our World Congresses are milestones in our path ahead, where we can reflect on the progress made and plan the future steps.

I wish to all of you a very successful Congress, exchanging of fresh ideas, forming new friendships and networks, and last but not least spending a very pleasant time in the beautiful city of Prague – the place of one of the oldest Universities in the world and a major cultural centre of Europe.

With best wishes



Slavik Tabakov
IOMP President

Welcome Message by the President of IFMBE

It gives me great pleasure to welcome all of you to the 25th World Congress on Medical Physics and Biomedical Engineering 2018.

Medical and biological engineering has over the past decades contributed significantly to the medical field. Moving ahead, there are multiple factors that are driving rapid changes to the healthcare industry landscape. They are economics-driven healthcare system reform, better understanding of human biology that impact medical practice, and new innovative technologies providing effective and precise diagnosis, treatment and monitoring. Advances in technology, in particular the development wearables, data analytics, Internet of Things (IoT), artificial intelligence (AI) and coupled with industry 4.0 will undoubtedly contribute significantly to the future of medicine. The proliferation of health centric devices and digital health will certainly give rise to connected health with increased fitness awareness. Thus, improving health and wellness overall. Aside from the digital revolution, multi-scale bioengineering approaches are also making impact in healthcare and medicine. This triennial congress is an excellent platform to disseminate and deliberate such advances and implementation. It highlights the important role of medical physics and biomedical engineering in scientific innovation and translating invention to practice, to enhance the healthcare interventions.

I am confident that you will have a fruitful scientific conference and at the same time establish many new collaborations and renew friendship. Lastly, I hope you will have the opportunity to explore Prague, one of Europe's most charming, colourful and beautiful cities.

Best wishes



James CH Goh
IFMBE President

HOSTS



International Union for Physical and Engineering Sciences in Medicine (IUPESM)

The IUPESM represents the combined efforts of more than 40,000 medical physicists and biomedical engineers working on the physical and engineering science of medicine. Its principle objective is to contribute to the advancement of physical and engineering sciences in medicine for the benefit and wellbeing of humanity. To achieve its purpose, IUPESM engages in several activities. It organizes and coordinates the triennial World Congress for Medical Physics and Biomedical Engineering as well as organizing and/or coordinating international meetings or conferences for the IUPESM constituent organizations. Further, it establishes committees, commissions, working groups and other bodies for purposes within its mandate. Two important task groups are IUPESM's Health Technology Task Group and its Women in Medical Physics and Biomedical Engineering Task Group. It is also involved in publishing scientific journals (notably its Health and Technology Journal), newsletters, books and electronic documents to enhance progress. It is also committed to disseminating, promoting and/or developing standards of practice in the fields of medical physics and biomedical engineering to enhance the quality of health care worldwide. IUPESM also represents the interests of its members in the International Council for Science and similarly collaborates with other international scientific, professional and medical organizations with common interests.

International Organization for Medical Physics



International Organization for Medical Physics (IOMP)

The International Organization for Medical Physics (IOMP), established in 1963, is the primary professional organization for medical physics. IOMP represents 86 National Members Organizations and 6 Regional Federations worldwide. IOMP is a Non-Governmental Organization (NGO) for the International Atomic Energy Agency (IAEA) and the World Health Organization (WHO). IOMP is charged with a mission 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. IOMP publishes the web-based Newsletter Medical Physics World and the web-based Journal Medical Physics International. Additionally IOMP sponsors most of the medical physics journals worldwide and organizes various educational and professional events worldwide, aiming to boost the global development of the profession. IOMP is one of the founding bodies of the International Union for Physical and Engineering Sciences in Medicine (IUPESM) and co-organizes the tri-annual World Congress of Medical Physics and Biomedical Engineering, as well as the International Conference on Medical Physics.

The statutes, bylaws, administrative structure, activities, awards, publications and other information about IOMP can be taken from its web site at: www.iomp.org



International Federation for Medical and Biological Engineering (IFMBE)

The International Federation for Medical and Biological Engineering (IFMBE) established in 1959 is primarily a federation of national and transnational societies. These professional organizations represent interests in medical and biological engineering. The IFMBE is also a Non-Governmental Organization (NGO) for the United Nations and the World Health Organization (WHO), where we are uniquely positioned to influence the delivery of health care to the world through Biomedical and Clinical Engineering. The IFMBE's objectives are scientific and technological as well as educational and literary. Within the field of medical, biological and clinical engineering IFMBE's aims are to encourage research and application of knowledge, and to disseminate information and promote collaboration. The ways in which we disseminate information include: organizing World Congresses and Regional Conferences, publishing our flagship journal Medical & Biological Engineering & Computing (MBEC), our web-based newsletter – IFMBE News, our Congress and Conference Proceedings, and books. The ways in which we promote collaborations is through networking programs, workshops and partnerships with other professional groups, e.g., Engineering World Health.

Visit our website: www.ifmbe.org



Česká společnost fyziků v medicíně (ČSFM) – Czech Association of Medical Physicists (CAMP)

The history of medical physics in the Czech Republic is as long as the history of using ionizing radiation, dating back to pioneering activities of František Běhounek and Rudolf Jedlička. The very first physicists were involved mainly in radiotherapy and nuclear medicine. While the history of medical physics in the Czech Republic is quite long, the history of the Czech Association of Medical Physicists (CAMP) is dated from the 6th April 2004. The main goals of CAMP are to represent medical physicists towards the state institutions and to support education, research and development in the field of medical physics. CAMP cooperates with national and international organizations and associations like EFOMP and IOMP. One of the main tasks of CAMP is to be a partner for the Ministry of Health (medical physicists in the Czech Republic are recognized as healthcare professionals) and for the State Office for Nuclear Safety. The current number of CAMP members is about 150 which is a number slightly lower than the total number of medical physicists in the Czech Republic (CAMP is a voluntary based association). The majority of CAMP members are involved in clinical radiotherapy, than in nuclear medicine, and there is also a constantly growing (but still minor) family of medical physicists working in diagnostic and interventional radiology. The board of CAMP has 7 members who are elected for 4 year term during the general assembly of all members. The first president of CAMP was Libor Judas (2004–2006 and 2006–2010), the second president is Jaroslav Ptáček (2010–2014 and 2014–2018). Since 2006 CAMP organizes its own one-and-a-half day Conferences in Medical Physics with 110 participants in 2017. Since 2013 CAMP cooperates with EFOMP in organizing European School for Medical Physics Experts in Prague with 9 editions so far and more than 300 unique participants in total. CAMP is proud to be responsible, together with the Czech Society for Biomedical Engineering and Medical Informatics, for organization of the IUPESM World Congress on Medical Physics & Biomedical Engineering 2018 in Prague.

Visit our website: www.csfm.cz



Česká společnost biomedicínského inženýrství a lékařské informatiky – Czech Society for Biomedical Engineering and Medical Informatics

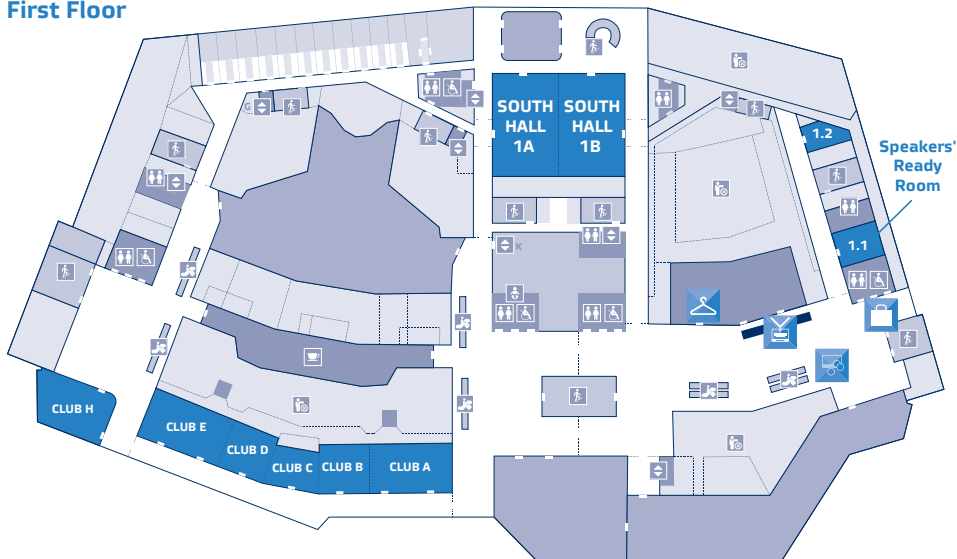
The Czech Society for Biomedical Engineering and Medical Informatics is a member of the Czech Medical Association J.E. Purkyne. The Society was established in 1975 as the Society for Biomedical Engineering. To reflect widened scope of activities, its name was changed to the Society for Biomedical Engineering and Medical Informatics in 1990 and a separate Section for Biomedicine Informatics has been formed within the Society. The Society is governed by a board of 11 members elected always for a 4-years period. Main activities include organisation of different scientific meetings (seminars, symposia, conferences) focused on BME related issues, cooperation with state authorities (e.g. Ministry of Health) on healthcare legislation and regulatory affairs, and participation on development of BME education, both on the pre-gradual and post-gradual level. As a member of the International Federation for Medical and Biological Engineering, International Medical Informatics Association, European Federation for Medical Informatics and International Society for Telemedicine and eHealth, it represents the Czech BME profession on the international scene. From its inception, the Society also runs its own scientific journal – “The Clinician and Technology Journal”. For each of those activities, separate working groups have been established within the board. In its history, the Society was twice entrusted with organization of a large international BME meeting – the EMBEC (European Medical and Biological Engineering Congress in 2007 and this year with the Czech Association of Medical Physicists the IUPESM world congress).

Visit our website: www.sbmili.cz

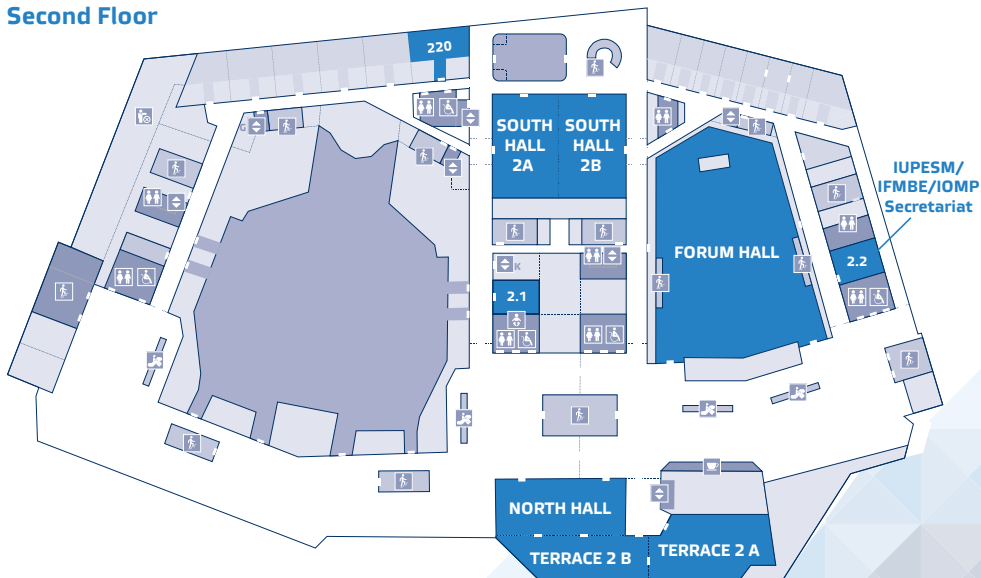
Floor Plans

 Registration  Cloakroom  Congress Bags  Cash Desk

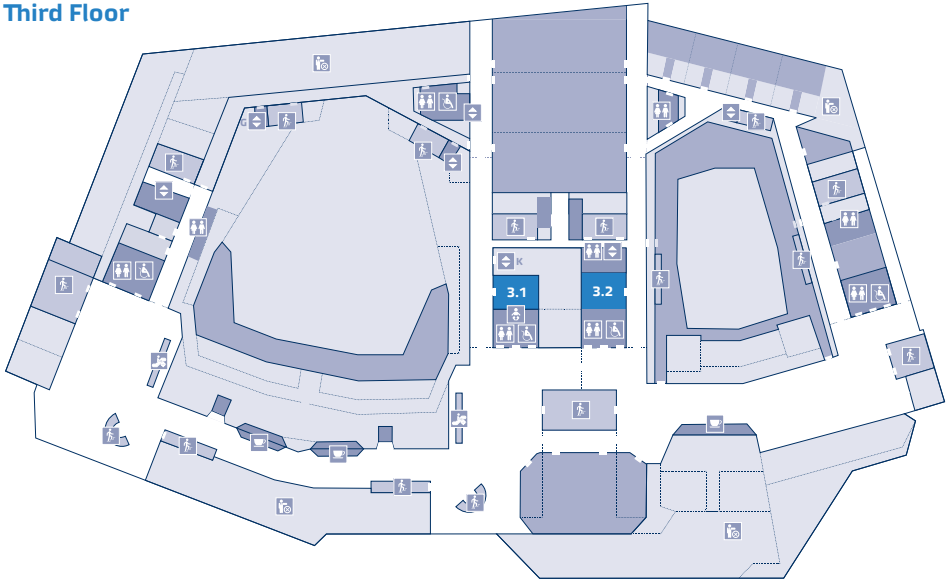
First Floor



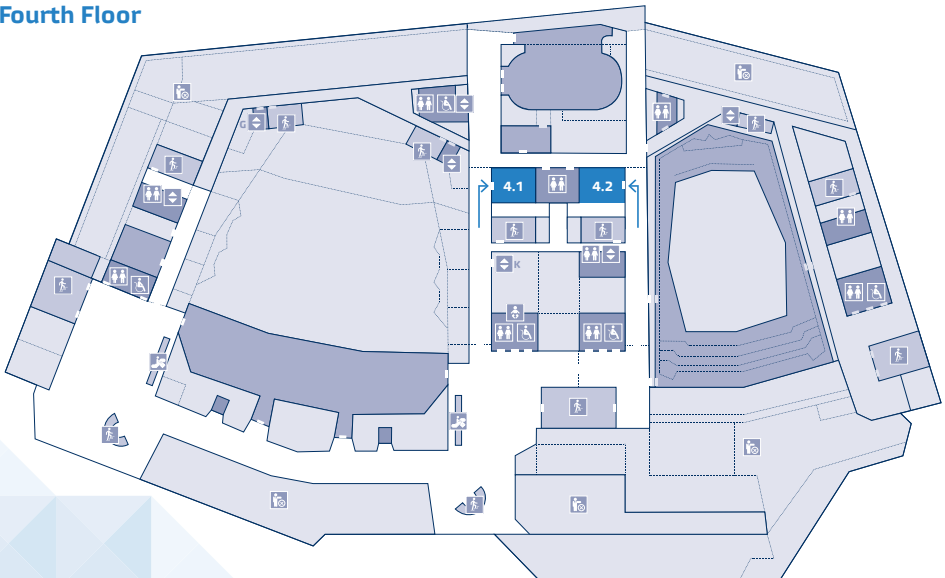
Second Floor



Third Floor



Fourth Floor



Scientific Programme Overview

SUNDAY, June 3, 2018	
	FORUM HALL 2 nd floor
14:00–14:30	Opening Ceremony / President's Welcome Address / President's Plenary Presentations
14:30–15:00	
15:00–15:30	
15:30–15:45	
15:45–16:00	Break
16:00–16:30	Plenary Lectures Invited Speakers / Awards Ceremony
16:30–17:00	
17:00–17:30	
17:30–18:00	
18:00–18:30	Welcome Cocktail (Exhibition Area)
18:30–19:00	
19:00–19:30	



MONDAY, June 4, 2018

	FORUM HALL 2 nd floor	SOUTH HALL 1B 1 st floor	CLUB A 1 st floor	CLUB B 1 st floor	CLUB C 1 st floor	CLUB D 1 st floor	CLUB E 1 st floor	CLUB H 1 st floor
08:00–08:30							Educational Lecture MP (08:00–08:45)	
08:30–09:00	MT9 – Biosignals Processing				IOMP SCHOOL – IOMP Project "History of Medical Physics"		Break (08:45–09:00)	
09:00–09:30		MT2 – Image Processing		IOMP SCHOOL – IOMP-AAPM Joint Session 1	IOMP SCHOOL – Dosimetric Challenges of Photon Brachytherapy in Terms of Absorbed Dose to Water	SS-19 The Status of Bio-Engineering, Biomedical Engineering and Clinical Engineering Education in Latin America	MT22 – Biological Effects of Ionizing Radiation	MT6 – Patient Safety
09:30–10:00								
10:00–10:30								
10:30–11:00	Networking Break		IAMBE Early Career Award Presentations (9:15 – 12:00)					
11:00–11:30	MT9 – Biosignals Processing	MT2 – Image Processing		SS-26 Application of EM Field in Medical Diagnostics	MT19 – Radiation Oncology Physics and Systems	MT22 – Biological Effects of Ionizing Radiation	IUPESM Awardees Presentation Session	MT20 – Dosimetry and Radiation Protection
11:30–12:00								
12:00–12:30			Health Informatics Panel Discussion (12:00–13:00)		IFMBE Student Design Competition Oral Presentations (12:15–13:45)			
12:30–13:00	Lunch Break							
13:00–13:30								
13:30–14:00								
14:00–14:30	MT9 – Biosignals Processing	MT2 – Image Processing	IFMBE Council of Societies (CoS) Meeting MT2 – Image Processing (13:30–15:30)	MT13 – Micro- and Nanosystems, Active Implants, Biosensors	SS-37 Medical Physics for World Benefit: A Volunteer Organization in Support of Medical Physics in Challenging Environments	MT19 – Radiation Oncology Physics and Systems	MT15 – Biomaterials, Cellular and Tissue Engineering, Artificial Organs	MT6 – Patient Safety
14:30–15:00								
15:00–15:30								
15:30–16:00	Networking Break							
16:00–16:30	IUPESM Presentation of 2024 bids (16:30–19:30)	MT2 – Image Processing	MT13 – Micro- and Nanosystems, Active Implants, Biosensors	Educational Lecture MP (16:00–16:45)	MT17 – Biological Effects of Electromagnetic Fields	MT7 – Accreditation and Certification	SS-35 Radiation exposure monitoring and tracking	MT6 – Patient Safety
16:30–17:00				Break (16:45–17:00)				
17:00–17:30				MT4 – Modelling and Simulation				
17:30–18:00								
18:00–18:30								
18:30–19:00								
19:00–19:30							SS-36 Radiation protection of women in childbearing age	

TUESDAY, June 5, 2018

	FORUM HALL 2 nd floor	SOUTH HALL 1B 1 st floor	CLUB A 1 st floor	CLUB B 1 st floor	CLUB C 1 st floor	CLUB D 1 st floor	CLUB E 1 st floor	CLUB H 1 st floor	
08:00–08:30									
08:30–09:00				SS-11 Context-Driven BME Interventions in Limited Resources Settings	IOMP SCHOOL – Radiation Safety Culture in Healthcare		Educational Lecture MP (08:00–08:45)	Educational Lecture MP (08:00–08:45)	
09:00–09:30							Break (08:45–09:00)	Break (08:45–09:00)	
09:30–10:00	MT2 – Image Processing	IOMP Council 1 IOMP GA IOMP Council 2 (08:00–12:30)	IOMP SCHOOL – IOMP-AAPM joint session 2		IOMP SCHOOL – Quality control for CBCT devices according to EFOMP-ESTRO-IAEA	MT18 – Clinical Engineering	MT 19 – Radiation Oncology Physics and Systems	MT12 – Diagnostic and Therapeutic Instrumentation	
10:00–10:30				SS-12 BME Contributions to Medical Device Trials					
10:30–11:00	Networking Break		Networking Break						
11:00–11:30									
11:30–12:00				SS-16 Emerging Technology in Diabetes Care: Advanced Real-time Diabetes Monitoring Systems	SS-09 Guidelines on the Early Assessment of Biomedical Innovations Using Multiple Criteria	IOMP/IAEA School on Uncertainties in Medical Dosimetry	SS-34 Integrated Precision Medicine Technologies	Educational Lecture MP (11:00–11:45)	MT12 – Diagnostic and Therapeutic Instrumentation
12:00–12:30								Break (11:45–12:00)	
12:30–13:00			Lunch Break						
13:00–13:30									
13:30–14:00									
14:00–14:30									
14:30–15:00	IFMBE General Assembly (12:00–17:30)	MT2 – Image Processing	SS-30 Recent Advances in EEG Signal Processing	SS-10 HTA Research and Education: Challenges and Opportunities for BMEs	SS-17 Necessity to Establish Healthcare Engineering Directorate for Enhancing Quality of Patient Care in Lower Middle Income Countries	MT21 – Advanced Technologies in Cancer Research and Treatment	MT23 – Nuclear Medicine and Molecular Imaging	MT12 – Diagnostic and Therapeutic Instrumentation	
15:00–15:30									
15:30–16:00		Networking Break							
16:00–16:30									
16:30–17:00	MT2 – Image Processing			MT18 – Clinical Engineering	SS-06 Expanding Horizons of Medical Physics: Patient Safety and Beyond	MT 21 – Advanced Technologies in Cancer Research and Treatment	Educational Lecture MP (16:00–16:45)	MT12 – Diagnostic and Therapeutic Instrumentation	
17:00–17:30		IOMP Young Investigator Symposium Oral Presentations (16:30–18:30)					Break (16:45–17:00)		
17:30–18:00						MT 4 – Modelling and Simulation	MT1 – Diagnostic Imaging		
18:00–18:30									

WEDNESDAY, June 6, 2018

	FORUM HALL 2 nd floor	SOUTH HALL 1B 1 st floor	CLUB A 1 st floor	CLUB B 1 st floor	CLUB C 1 st floor	CLUB D 1 st floor	CLUB E 1 st floor	CLUB H 1 st floor	
08:00–08:30				Educational Lecture MP (08:00–08:45)	IOMP SCHOOL – IOMP/IUPAP Workshop on Medical Physics Partnering with the Developing World	SS-24 Global Credentialing in Clinical Engineering	Educational Lecture MP (08:00–08:45)		
08:30–09:00		MT10 – Biomechanics, Rehabilitation and Prosthetics		Break (08:45–09:00)		Break (09:00–09:15)	Break (08:45–09:00)		
09:00–09:30			SS-14 Women in Medical Physics and Biomedical Engineering	IOMP SCHOOL – IOMP-ISR Session on Diagnostic Reference Levels – New trends in Concepts and Methodology					
09:30–10:00							IOMP SCHOOL – Radiobiological Optimization of Treatment Plans	MT 19 – Radiation Oncology Physics and Systems	SS-18 Potential Breakthrough Points of Emission Tomography on Brain Exploration
10:00–10:30									
10:30–11:00			Networking Break						
11:00–11:30	IUPESM GA (10:30–13:30)	MT10 – Biomechanics, Rehabilitation and Prosthetics	SS-14 Women in Medical Physics and Biomedical Engineering	SS-28 Clinical Engineering Innovation Leading to Improved Clinical Outcomes	MT19 – Radiation Oncology Physics and Systems	SS-08 – Real-time Tracking Technologies for Interstitial Brachytherapy	MT 2 – Image Processing		
11:30–12:00									
12:00–12:30									
12:30–13:00			Lunch Break						
13:00–13:30									
13:30–14:00									
14:00–14:30		MT10 – Biomechanics, Rehabilitation and Prosthetics		MT11 – Minimum Invasive Surgery, Robotics, Image Guided Therapies, Endoscopy	SS-05 Patient and Technology Management Challenges in Rural Health Centers	Educational Lecture MP (14:00–14:45)	Educational Lecture MP (14:00–14:45)	MT5 – BME and MP Education, Training and Professional Development	
14:30–15:00				Break (14:45–15:00)					
15:00–15:30			SS-14 Women in Medical Physics and Biomedical Engineering						
15:30–16:00	Networking Break			IFMBE Young Investigator Symposium Oral Presentations (15:00–17:30)	Networking Break				
16:00–16:30		MT10 – Biomechanics, Rehabilitation and Prosthetics			SS-29 Eliminating Global Medical Physics Disparities	MT19 – Radiation Oncology Physics and Systems	SS-25 – Evidence-Based Contributions of Clinical Engineers to Improving Global Patients' Outcomes	MT5 – BME and MP Education, Training and Professional Development	
16:30–17:00									
17:00–17:30									
17:30–18:00									

FRIDAY, June 8, 2018

	FORUM HALL 2 nd floor	CLUB A 1 st floor	CLUB B 1 st floor	CLUB C 1 st floor	CLUB E 1 st floor	CLUB H 1 st floor	TERRACE 2A 2 nd floor
08:00–08:30	MT18 – Clinical Engineering	MT19 – Radiation Oncology Physics and Systems	Educational Lecture MP	IOMP SCHOOL – MRI-Guided Radiation Therapy	Educational Lecture MP	MT19 – Radiation Oncology Physics and Systems	IOMP SCHOOL – Meet the Editors
08:30–09:00			Break (08:45–09:00)		Break (08:45–09:00)		
09:00–09:30			MT21 – Advanced Technologies in Cancer Research and Treatment	MT20 – Dosimetry and Radiation Protection	Break		
09:30–10:00							
10:00–10:30							
10:30–10:45	Break						
10:45–11:30	Closing Ceremony (10:45–13:00)						
11:30–12:00							
12:00–12:30							
12:30–13:00							



IUPESM/IFMBE/IOMP Meetings

Saturday, June 2, 2018

08:00–10:30	IFMBE Officers Meeting	GUARANT International
10:30–15:00	IFMBE AC Meeting (Part A)	GUARANT International
15:00–20:00	IFMBE AC Meeting (Part B)	GUARANT International

Sunday, June 3, 2018

10:00–12:00	IUPESM AC1	Room 2.2
14:00–15:45	Opening Ceremony / President's Welcome Address / President's Plenary Lecture	Forum Hall
16:00–18:30	Plenary Lecture Invited Speakers / Awards Ceremony	Forum Hall
18:30–19:30	Welcome Cocktail	Exhibition Area

Monday, June 4, 2018

08:00–09:00	IFMBE HTAD Meeting	Room 2.1
08:00–09:00	IFMBE Developing Countries WG	Room 3.1
08:00–09:00	IAMBE Governing Council Meetings	Room 3.2
09:00–10:00	IFMBE CED Meeting	Room 2.1
09:00–10:00	IFMBE Interim Working Group on African Activities	Room 3.1
09:00–10:30	IOMP ExCom 1	Room 220
09:15–12:00	IAMBE Early Career Award Presentations	Club A
10:00–12:00	Joint Meeting of IFMBE Constitution & Bylaws Committee and Membership Committee	Room 3.1
10:00–12:00	IFMBE CORAL Meeting	Room 2.1
10:30–11:30	IOMP Company	Room 220
10:30–12:30	IUPESM Public and International Relations Committee	Room 3.2
11:00–12:00	IUPESM Awardees Presentation Session	Club E
11:30–13:00	IOMP RCB Lunch	Room 220
12:00–13:30	IFMBE Council of Societies EB Meeting	Room 3.1
12:15–13:30	IFMBE Student Design Competition Oral Presentations	Club C
12:30–14:00	Medial Physics Certification Board	Room 3.2
13:00–14:30	IOMP Awardees presentations	Terrace 2B

13:30–15:30	IFMBE Council of Societies (CoS) Meeting	Club A
15:30–16:30	IAMBE General Assembly	Room 3.1
16:30–17:30	IOMP Sc Com	Room 220
16:30–19:30	IUPESM Presentation of 2024 Bids	Forum Hall
17:30–18:30	IOMP History SC	Room 220
18:30–19:30	IOMP MPI	Room 220
19:30–21:00	IAMBE Dinner	Pzenska Restaurant (Municipal House)
19:30–21:00	IOMP ExCom Dinner	Esprit Restaurant

Tuesday, June 5, 2018		
08:00–09:30	IFMBE Special Session on Education and Accreditation	Room 1.2
08:00–10:00	IOMP Council 1	South Hall 1B
08:30–10:00	IFMBE FJC / Publisher Present + Editorial Board	Room 2.1
09:30–10:00	IFMBE E & A Committee Meeting	Room 1.2
10:00–11:00	IFMBE Meet the Editor Sessions MBEC + Health & Tech.	Room 2.1
10:00–10:30	IOMP GA	South Hall 1B
10:30–12:00	IOMP Council 2	South Hall 1B
11:00–12:00	Incoming IAMBE Council	Room 2.1
11:00–12:00	IUPESM WIMPBE Task Group	Room 220
12:00–17:30	IFMBE General Assembly	Forum hall
12:30–13:30	IOMP-WHO Lunch	Room 2.1
13:30–14:30	IOMP Women's Group	Room 2.1
13:30–14:30	IOMP Publication	Room 220
14:30–15:30	IOMP AHC	Room 2.1
14:30–15:30	IOMP MPW	Room 220
15:30–16:30	IOMP PRC	Room 220
16:30–18:30	IOMP Young Investigator Symposium Oral Presentations	Club A
18:30–21:00	IFMBE Presidential Dinner (By Invitation)	Holiday Inn Hotel – Restaurant Esprit
19:00–21:00	IOMP Presidential Dinner (By Invitation)	Corinthia Towers Hotel – Restaurant Let's Eat

Wednesday, June 6, 2018

08:00–09:00	IFMBE In-coming Officers' Meeting	Room 2.1
09:00–10:30	IFMBE In-coming AC Meeting	Room 2.1
10:30–11:30	IFMBE In-coming Clinical Engineering Division	Room 3.2
10:30–13:30	IUPESM GA	Forum Hall
11:30–12:30	IFMBE In-coming Healthcare Technology Assessment Division	Room 3.2
12:30–15:00	Women in BME Meeting	TBA
13:30–14:30	IOMP-IAEA Lunch	Room 2.1
14:00–15:00	IUPESM Union Journal Committee	Room 3.2
15:00–17:30	IFMBE Young Investigator Symposium Oral Presentations	Club B
15:00–16:30	IUPESM HTTG	Room 3.2
15:30–16:30	AAPM-IOMP	Room 2.1
16:30–18:00	IUPESM ICSU Liaison Committee	Room 3.2

Thursday, June 7, 2018

08:00–09:30	IFMBE Cell & Stem Cell Engineering WG Mtg	Room 2.1
08:00–09:30	IFMBE Bioethics Committee Meeting	Room 3.2
08:00–09:30	IFMBE Global Citizen Safety & Security Meeting	Room 3.1
08:00–09:30	IUPESM Education and Training Committee	Room 1.2
09:00–10:00	IOMP ExCom 2	Room 220
09:30–12:00	IFMBE Awardees Keynote Lectures	Club A
10:00–10:30	IOMP Company	Room 220
11:00–13:30	EAMBES Fellows Lunch	Room 3.2
11:30–13:00	ExComs of IUPESM, IFMBE and IOMP Working Lunch	Room 2.1
12:00–13:00	IFMBE Asian-Pacific Working Group Meeting	Room 3.1
13:00–15:00	IFMBE Asian-Pacific Research Network Scientific Paper Presentations	Room 3.1
13:00–15:00	IUPESM AC 2	Room 220
14:00–15:00	IOMP AHC 2	Room 3.2
15:00–17:00	IFMBE Publicity Committee Meeting	Room 3.1
15:00–16:00	IOMP SC 2	Room 1.2
15:00–16:00	IOMP PRC 2	Room 3.2
16:00–17:00	IOMP MPW 2	Room 1.2
16:00–17:00	IOMP ETC 2	Room 3.2

16:00–18:00	Memorial Session for Joachim Nagel, Herb Voigt and Nandor Richter	North Hall
17:00–18:00	IOMP Public 2	Room 1.2
17:00–19:00	IFMBE Health Informatics and eHealth WG Meeting	Room 3.2
17:00–19:00	IFMBE Publication Committee Meeting	Room 220
17:00–19:00	IFMBE Industry Working-Group Meeting	Room 3.1

Friday, June 8, 2018

08:30–10:30	IUPESM Congress Coordinating Committee	Room 220
10:45–13:00	Closing Ceremony / IUPESM / IFMBE / IOMP Awards / WC 2021 Presentations	Forum Hall



Social Events

Opening Ceremony / Plenary Lectures / Awards Ceremony

Date: Sunday, June 3, 2018
Time: 14:00–18:30
Location: Forum Hall, Prague Congress Centre

Part 1

14:00–14:10 **Welcome Music Performance**

14:10–14:15 **Official Congress Opening – President IUPESM**

14:15–14:35 **President’s IFMBE, IOMP, CAMP, CSBMEMI Welcome Addresses**

14:35–15:35 **IUPESM, IFMBE, IOMP President’s Plenary Lecture
Innovations in Medicine – The Role of Medical Physicists
and Biomedical Engineers**

*Kin Yin Cheung, Medical Physics & Research Department, Hong Kong
Sanatorium & Hospital, (Hong Kong, China)*

Engineering Innovations for Future Healthcare

*James Goh, Biomedical Engineering, National University of Singapore,
(Singapore, Singapore)*

**Global Distribution of Medical Physicists, Their Growth Over the Past
50 Years and Future Development**

*Slavik Tabakov, Med. Eng. Phys, IOMP and King’s College London, London,
(United Kingdom)*

15:35–15:45 **Music Performance**

15:45–16:00 **Break**

Part 2

16:00–17:00 **Invited Speakers Plenary Lecture
Improving Clinical Outcomes of Adaptive Cancer Therapies
with Radiation: Strategies, Technologies and Challenges**

Uwe Delfke, (United Kingdom)

Physicists and Engineer’s Interaction with Physicians in Medical Imaging

Russell Ritenour, (United States of America)

17:00–18:30 **Awards Ceremony**

18:30–19:30 **Welcome Cocktail**

Congress Dinner

Date: Wednesday, June 6, 2018
Time: 19:30–23:00
Location: Žofin Palace
Dress code: Semi-formal
Catering: Buffet style dinner
Price: 80 EUR

Closing Ceremony

Date: Friday, June 8, 2018
Time: 10:45–13:00
Location: Forum Hall, Prague Congress Centre



Lunch Symposium

ELEKTA Lunch Symposium

Date: Monday, June 4, 2018

Time: 12:45–13:45

Meeting room: North Hall



Title: Innovation in Advanced Radiation Medicine

Session 1 – Optimizing Cone Beam CT Guided Radiotherapy

Marcel van Herk, Chair of Radiotherapy Physics, University of Manchester and The Christie Hospital, UK

Session 2 – MR Guided RT from Vision to Reality

Uwe Oelfke, Royal Marsden Hospital, UK

Session 3 – Revolution in Planning and Treatment Delivery: High Definition Dynamic Radiosurgery HDRS

Roberto Pellegrini, Director Clinical Marketing, Elekta



Congress Information

On-site Registration Fees

Member	770 EUR
Non-Member	880 EUR
Participant-Lower Middle Income Countries	500 EUR
Participant-Low Income Countries	300 EUR
Student	360 EUR
One Day Registration	370 EUR

Registration Desk opening hours

Sunday, June 3, 2018	12:00–19:00
Monday, June 4, 2018	07:00–18:00
Tuesday, June 5, 2018	07:00–18:00
Wednesday, June 6, 2018	07:30–18:00
Thursday, June 7, 2018	07:30–17:00
Friday, June 8, 2018	07:30–12:00

Instructions for Oral Presentations

Speakers' Ready Room is located in the meeting room 1.1 on the first floor at Prague Congress Centre.

Please come to the Speakers' Ready Room at least 1,5 hours before the beginning of your session, CES speakers please arrive at least 1 hour before session. In case your speech has been scheduled for morning session come to the Speakers' Ready Room the day before your presentation.

Speakers' Ready Room opening hours

Sunday, June 3, 2018	12:00–19:00
Monday, June 4, 2018	07:00–19:00
Tuesday, June 5, 2018	07:00–19:00
Wednesday, June 6, 2018	07:00–19:00
Thursday, June 7, 2018	07:00–19:00
Friday, June 8, 2018	07:30–13:30

Badges

Delegate will receive a name badge upon the registration. Everyone is kindly requested to wear the name badge when attending the Congress. Only delegates who are wearing their name badge will be admitted to the congress halls. Badges will be clearly identified.

Certificates

The certificate of attendance will be available to download after the Congress. Each delegate will receive the email with instructions for downloading.

EBAMP Accreditation

EBAMP accredits the World Congress on Medical Physics and Biomedical Engineering. The event has been judged according to the EBAMP protocol and it has been accredited by EBAMP as CPD event for Medical Physicists at EQF Level 7 and awarded **38 CPD credit points**.

MPCEC Credits

The IUPESM 2018 World Congress Continuing Education Program has applied to be CAMPEP accredited for up to 78,5 MPCEC credits. To obtain MPCEC credits, participants should complete the online evaluation survey.



Registration

The Registration Desk is located on the first floor in the Prague Congress Centre, accessible via main entrance. Please, register and pick up your badge and collect materials before you take any participation at the Congress.

Posters

The electronic posters are displayed on the Congress website www.iupesm2018.org. All e-posters are available for viewing at e-poster stations located on the first and second floor in the Prague Congress Centre. All e-posters are available throughout the whole duration of the Congress June 3–8, 2018. Free discussions at e-poster stations will be held on the first floor. The detailed schedule of free discussions at e-poster stations is available on the Congress website www.iupesm2018.org.

Internet

Network: IUPESM-WC2018 | Password: IUPESM2018

Book of Abstracts

Book of Abstracts is available to download on the Congress website www.iupesm2018.org.

Mobile Application

For the comfort of Congress delegates a Mobile Application with up-to-date programme and other useful information is available. You will have the opportunity to increase your interactivity and have the entire Congress “in your hand”.

**Download the IUPESM 2018 Mobile Application
in App Store/Google play (Android Market):**



Exhibition

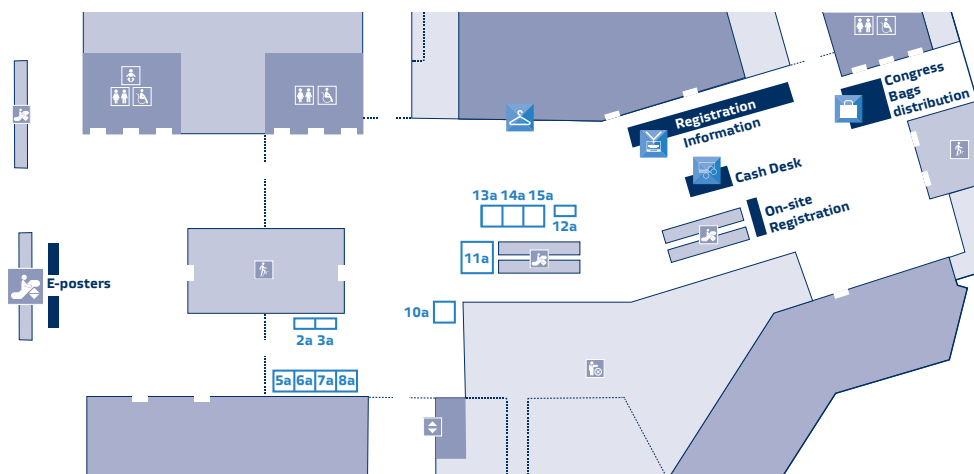
Exhibition is located on the first and second floor in the Prague Congress Centre.

Exhibition opening hours

Sunday, June 3, 2018	12:00–19:30
Monday, June 4, 2018	09:00–17:30
Tuesday, June 5, 2018	09:00–17:30
Wednesday, June 6, 2018	09:00–17:30
Thursday, June 7, 2018	09:00–17:30

Exhibition Floor Plans

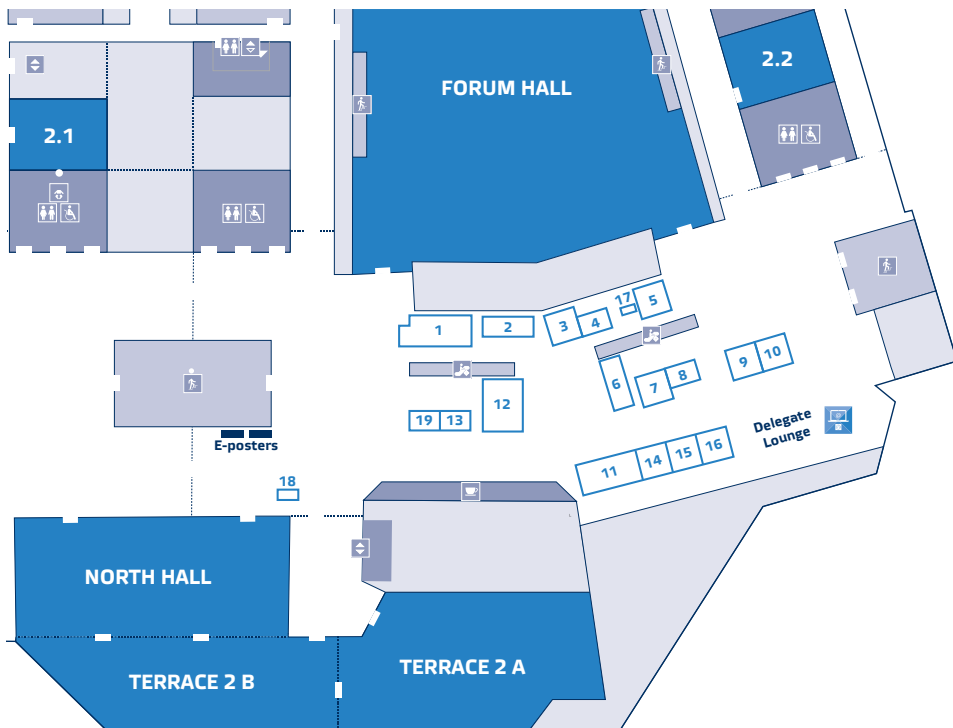
First Floor



List of Exhibitors (First Floor)

- 2a Institute of Physics and Engineering in Medicine (IPEM)
- 3a European Society of Radiology (ESR)
- 5a WC 2024 candidate Mexiko
- 6a WC 2024 candidate Cartagena de Indias Convention Bureau: ABIQIN – ACOFIMPRO
- 7a WC 2024 candidate Argentina
- 8a WC 2024 candidate JSMP(Japan Society of Medical Physics)
& JSMBE (Japanese Society for Medical and Biological Engineering)
- 10a WC 2021 Singapoure
- 11a WC 2024 candidate Adelaide Convention Bureau, Australia
- 12a Springer
- 13a International Organization for Medical Physics IOMP
- 14a International Federation for Medical and Biomedical Engineering IFMBE
- 15a International Union for Physical and Engineering Sciences in Medicine IUPESM

Second Floor



List of Exhibitors (Second Floor)

- 1 Varian
- 2 STANDARD IMAGING
- 3 Sun Nuclear Corporation
- 4 ScandiDos
- 5 ECRI Institute
- 6 RaySearch Laboratories
- 7 IBA Dosimetry GmbH
- 8 MINIRAD
- 9–10 LINET
- 11 PTW-Freiburg
- 12 ELEKTA
- 13 MICROPOS MEDICAL
- 14 XStrahl Ltd.
- 15 CIRS Inc.
- 16 Canberra-Packard
- 17 Project H2020 INSPIRE – INfraStructure in Proton International REsearch
- 18 CEITEC
- 19 Walter de Gruyter

Company Profiles

Elekta



Elekta's innovative equipment and software are used to improve, prolong and save the lives of people with cancer and brain disorders. Its advanced, effective solutions are designed in collaboration with customers, and more than 6,000 hospitals worldwide rely on Elekta technology.

As a leading supplier of medical devices and oncology informatics, Elekta's portfolio is designed to enhance the delivery of radiation therapy, radiosurgery and brachytherapy, and to drive cost efficiency in clinical workflows.

Elekta employs more than 3,600 employees around the world. Its headquarters is located in Stockholm, Sweden, and the company is listed on NASDAQ Stockholm.

www.elekta.com

Varian Medical Systems



Varian Medical Systems, Inc., of Palo Alto, California, focuses energy on saving lives by equipping the world with advanced technology for fighting cancer.

The company is the world's leading manufacturer of medical devices and software for treating cancer and other medical conditions with radiotherapy, radiosurgery, proton therapy and brachytherapy. The company supplies informatics software for managing comprehensive cancer clinics, radiotherapy centers and medical oncology practices. Varian Medical Systems employs approximately 6,500 people at sites around the world.

For more information, visit www.varian.com and follow [@VarianMedSys](https://twitter.com/VarianMedSys) on Twitter.

RaySearch Laboratories



RaySearch Laboratories AB (publ) has been pushing the limits of advanced cancer treatment since 2000. Using progressive algorithms, RaySearch develops world leading software used by thousands of the most cutting-edge cancer clinics in the world. The algorithms are based upon founder and CEO Johan Löf's scientific knowledge, acquired during his PhD on radiation treatment of moving tumors.

RayStation is a flexible treatment planning system which integrates all RaySearch's advanced treatment planning solutions. It combines unique features such as multi-criteria optimization tools with full support for 4D adaptive radiation therapy. It also includes functionality such as market-leading algorithms for IMRT and VMAT optimization and highly accurate dose engines for photon, electron, proton and carbon ion therapy. The system features a graphical user interface with state-of-the-art usability.

The OIS RayCare represents the future, developed from the ground up by RaySearch to support the complex logistical challenges of modern, large-scale radiation therapy centers. RayCare integrates the high-performance radiation therapy algorithms available in RayStation with advanced features for clinical resource optimization, workflow automation and adaptive radiation therapy.

RaySearch's software is a result of extensive development during years of research, used to improve chances of survival and quality of life for cancer patients. We fight for a world where cancer is conquered.

www.raysearchlabs.com

IUPESM World Congress on Medical Physics and Biomedical Engineering 2021

Sands Expo and Convention Centre, Marina Bay Sands, Singapore

30 May – 4 June 2021



Visit www.iupesm2021.com and join our mailing list to receive updates on the congress

Jointly organised by



Society of Medical Physicists (Singapore)

Host organisations



Held in



Supported by



Managed by



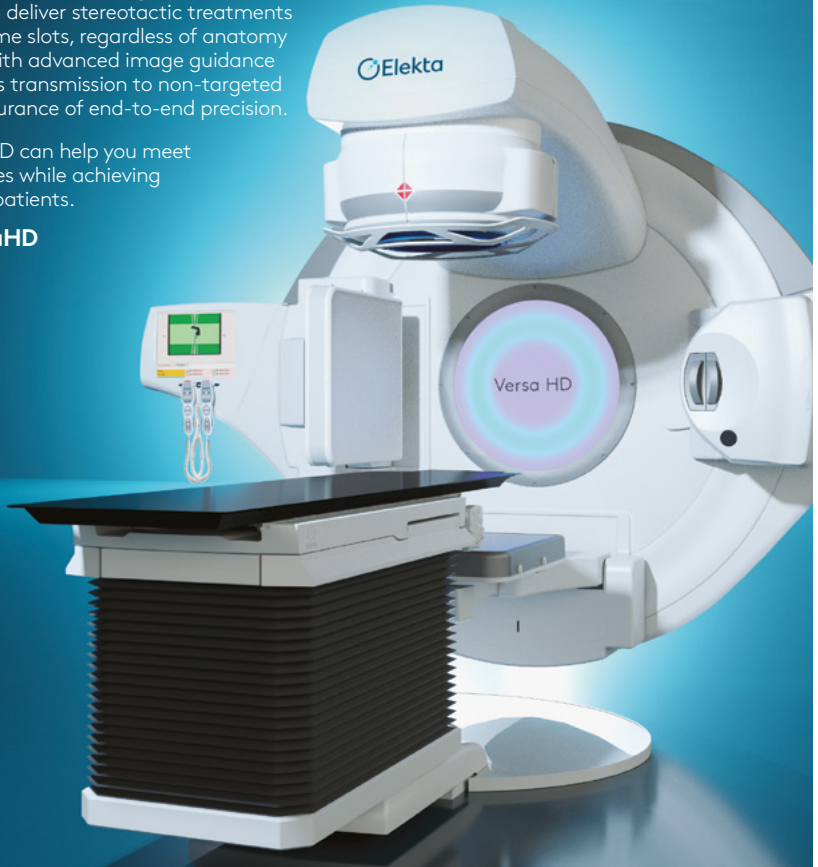
VersaHD.

Powered by high definition dynamic radiosurgery.

Versa HD™ with Monaco® gives you the clinical flexibility of high definition dynamic radiosurgery (HDRS) and conventional RT in a single platform. HDRS means you can deliver stereotactic treatments within standard RT time slots, regardless of anatomy or complexity. And, with advanced image guidance tools and up to 5x less transmission to non-targeted regions, you have assurance of end-to-end precision.

Discover how Versa HD can help you meet operational efficiencies while achieving better outcomes for patients.

elekta.com/VersaHD



Focus where it matters.

 Elekta



Unleash your ability to deliver high-precision SRS treatments

HyperArc™ high-definition radiotherapy technology is designed to simplify even the most complex non-coplanar SRS treatments. Experience leading-edge features that allow you to treat multiple metastases simultaneously, enhancing your ability to treat more patients, reduce treatment times, increase throughput and maximize efficiency.

Learn more at: [Varian.com/HyperArc](https://www.varian.com/HyperArc)

Safety information: Radiation may cause side effects and may not be appropriate for all cancers.

© 2018 Varian Medical Systems, Inc. Varian and Varian Medical Systems are registered trademarks, and HyperArc is a trademark of Varian Medical Systems, Inc.

varian

Published continuously since 1970

... for 48 years

CLINICIAN AND TECHNOLOGY – LÉKAŘ A TECHNIKA

The official journal of Czech Society for Biomedical Engineering and Medical Informatics and of the Faculty of Biomedical Engineering, Czech Technical University in Prague.

- SCOPUS (Elsevier) indexed journal
- No publishing (page processing) fee
- Full Open Access
- Peer-reviewed
- On-line and printed editions

To publish your research article, go to:

<http://ctj.fbmi.cvut.cz>



- Articles are published under CC BY 4.0 licence – you may distribute them and add to a web page freely
- Printed (ISSN 0301-5491) and on-line (ISSN 2336-5552)

Focus and Scope

Clinician and Technology – Lékař a technika is an open access, peer-reviewed international scientific journal. The mission of the journal is to foster the development in a wide range of biomedical engineering and to create a platform for exchange of information and results of scientific research in the field of biomedical engineering.

The journal addresses the following topics:

- Biological signal acquisition and processing
- Biomedical instrumentation
- Medical devices
- Medical imaging systems and image processing
- Biomechanics and biomaterials
- Biomedical informatics
- Biomedical modeling and simulation
- Management and safety of medical devices

Titles of recently published articles

RELIABILITY AND SOURCE OF ERRORS IN END-TIDAL GAS CONCENTRATION EVALUATION ALGORITHMS DURING AVALANCHE SNOW AND REBREATHING EXPERIMENTS • DETERMINATION OF THE GEOMETRICAL AND VISCOELASTIC PROPERTIES OF SCAFFOLDS MADE BY ADDITIVE MANUFACTURING USING BIOPLOTTER • METHODS FOR AUTOMATIC ESTIMATION OF THE NUMBER OF CLUSTERS FOR K-MEANS ALGORITHM USED ON EEG SIGNAL: FEASIBILITY STUDY • DEVELOPMENT OF NEW TECHNIQUE FOR ACCURATE WEAR ANALYSIS OF EXPLANTED TOTAL HIP REPLACEMENTS • DESIGN OF AN EXPERIMENTAL LASER SPECKLE CONTRAST IMAGING SYSTEM AND IMAGE EVALUATION

Editorial Team

Editor-in-Chief:

Karel Roubík, PhD

Czech Technical University in Prague,
Faculty of Biomedical Engineering
Kladno, Czech Republic
phone: +420-603-479-901
e-mail: roubik@fbmi.cvut.cz

Deputy Editors:

Thomas E Bachman, MSc

Economedtrx
Lake Arrowhead, California, USA
phone: +1-951-236-4890
e-mail: tbachman@me.com

Jakub Ráfl, PhD

Czech Technical University in Prague,
Faculty of Biomedical Engineering
Kladno, Czech Republic
phone: +420-728-229-991
e-mail: rafl@fbmi.cvut.cz

AMEDIS

www.amedis.cz

representation, import, installation, training, service

AMEDIS, spol. s r.o. was founded in February 1993 to operate in the field of medical equipment in the Czech Republic. Priority of our company is providing complex radiotherapy solutions utilizing X-Rays treatment for radiation oncology departments. We also focus on providing equipment for analytical laboratories such as chemical and physical analyzers. We provide installation and service for our devices, including additional support services in both areas.

AMEDIS, spol. s r.o. is permit holder from State Office for Nuclear Safety for the use of ionizing radiation sources in the scope of import, export, distribution, installation, commissioning and repairs, as well as approval for the performance of services important for radiation protection. In the field of medical devices for radiation oncology our company provides all operations starting with the import of the devices to the acceptance tests.

AMEDIS, spol. s r.o. provides delivery, installation, training and servicing of the following medical devices:

- Wide Range of Treatment Systems for Radiotherapy:
Linear Accelerators, Systems for SRS/SRT, X-Ray Systems for Simulation, Treatment Planning and Verification Systems, Automatic HDR Afterloading for Brachytherapy.
- Full range of innovative solutions for Quality Assurance:
Absolute, Relative and In Vivo Dosimetry, Verification of Plans for Dynamic Treatment Techniques.
- Positioning and Motion Management Solutions for Disease Site:
Head & Neck, Breast and Abdomen, Pelvis and lower Limbs,
Vacuum Positioning Cushions, Immobilization for SRS/SBRT patients.
- Laser Systems for Patient Alignment used in Therapeutic and Diagnostic Applications to Localize and Simulate Patient's Position.
- Equipment for Stereotactic Radiotherapy.
- Gafchromic Processorless Film Dosimetry Systems.
- X-ray Therapy Treatment Units.
- Self-contained X-ray Blood Irradiators.

SOCIAL MEDIA

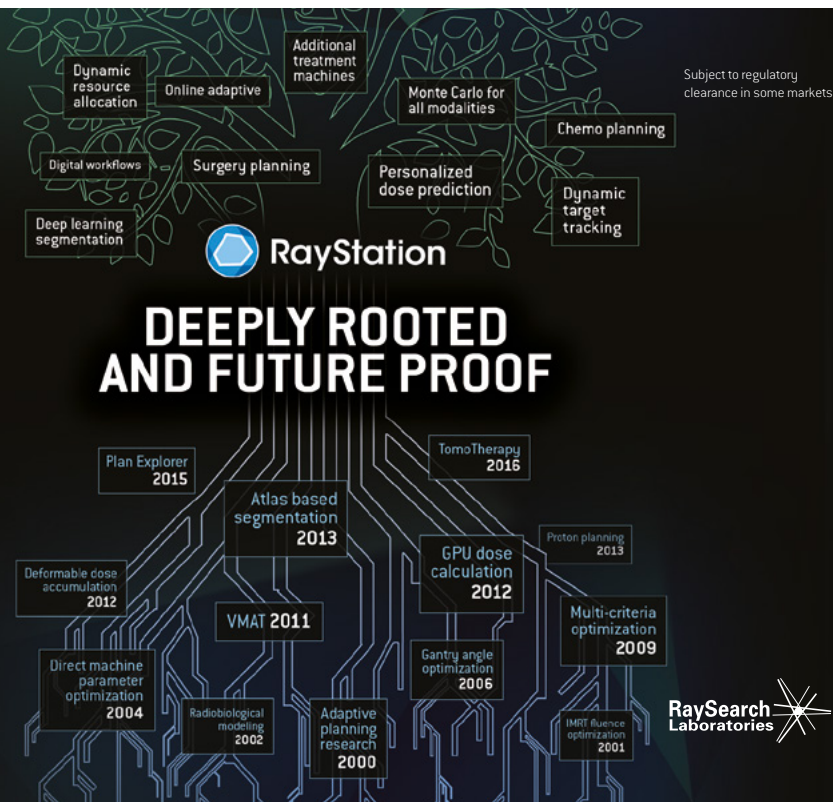
Follow Congress IUPESM 2018 on social media:



<https://www.facebook.com/IUPESM2018/>



https://twitter.com/IUPESM_2018





World Congress on Medical Physics & Biomedical Engineering

June 3–8, 2018
Prague, Czech Republic



Congress Secretariat

GUARANT International, Tel.: +420 284 001 444, fax: +420 284 001 448

E-mail: agency@iupesm2018.org, web: www.guarant.cz



<http://www.praha.eu/jnp/en/index.html>

