EFOMP

EUROPEAN FEDERATION OF ORGANISATIONS FOR MEDICAL PHYSICS

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Summer is around the corner!

Dear EMP News readers,
It's a pleasure to welcome you to this summer issue of *European Medical Physics News!* With the warm season just around the corner, many of us are beginning to dream of a well-deserved break after a busy and productive spring. And what a spring it has been—packed with key events, inspiring meetings, and important milestones for the European medical physics community and EFOMP.

Reflecting on a Remarkable Spring
As you may have already noticed, this issue is a particularly rich one—spanning more than 100 pages! That's because we're taking the time to reflect on a vibrant season filled with some of the most significant annual events in our field, including the European Congress of Radiology (ECR) and the ESTRO Annual Meeting. You'll find several thoughtful articles inside that not only highlight the scientific excellence of these gatherings but also emphasise EFOMP's growing engagement within these important professional societies.

We're also delighted to report on not just one, but two educational highlights from this spring: the ESMPE School on Radionuclide Internal Dosimetry held in Prague, and EFOMP's very first Leadership Course for Medical Physics Experts (MPEs) in Brussels. Both events were exceptionally well-attended and sparked much enthusiasm, particularly among early career professionals. Huge thanks to all the organising committees whose dedication and effort made these events a great success.

Another highlight was the 12th Alpe-Adria Medical Physics Meeting, held in the scenic city of Trieste in May. Not only did it host an EFOMP School focused on new technologies in radiotherapy, it also served as the venue for the EFOMP Officers' Meeting. We encourage you to read the full report from our Secretary General, Brenda Byrne, to catch up on all the developments.

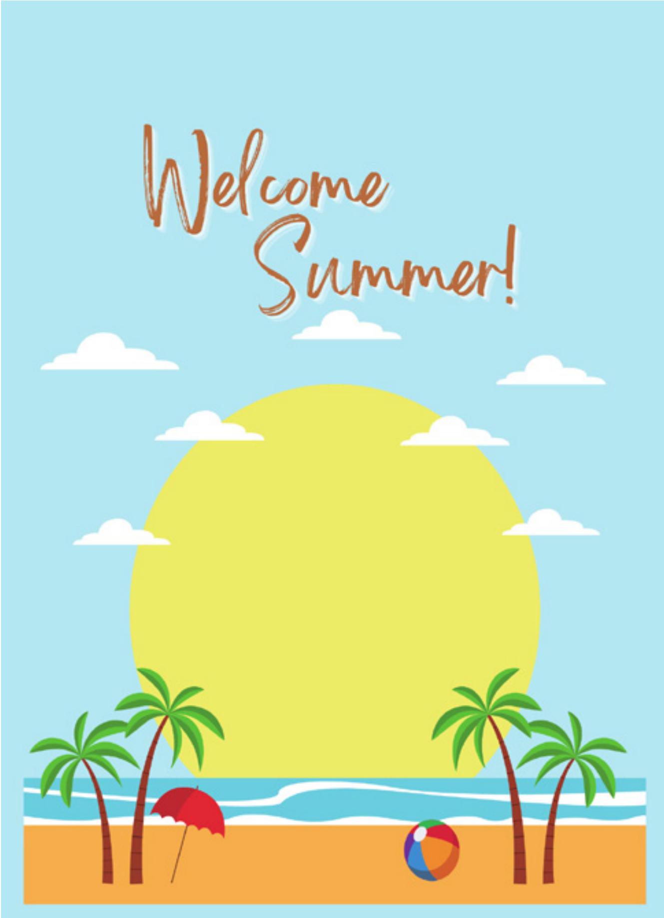


Figure. Warmest Summer Greetings to Our Medical Physics Community

Looking Ahead: Global Gatherings and Future Visions

As we look towards the future, one particularly exciting event looms on the horizon—the IUPESM 2025 World Congress, taking place in Adelaide, Australia. This international gathering is a major event for medical physicists and biomedical engineers worldwide. In this issue, Cinzia Talamonti provides an excellent preview of the congress and highlights the role of its Conference Chair, Professor Eva Bezak.

Closer to home, we've already begun the countdown to ECMP 2026 in Valencia! It may feel like we've only just returned from Munich, but preparations for our next European Congress are in full swing. Valencia promises to be a fantastic host—combining scientific excellence with rich culture and sunny charm. Read more about what's in store in the update from EFOMP President Efi Koutsouveli—we think you'll be just as excited as we are.

Celebrating Emerging Talent

We're thrilled to continue celebrating the next generation of professionals through our *Early Career Article Award*. This initiative, launched in the last issue, recognises the best contribution from an early career medical physicist (within 10 years of MPE registration or receiving a higher academic degree). Winners of the award in 2025 and the first two issues of 2026 will receive free online registration to EFOMP schools in 2026.

The inaugural award went to Džiugilė Valiukevičiūtė of Vilnius University Hospital Santaros Klinikos for her outstanding article on The Effects of Alpha Particles on Cells. Her work was not only scientifically rigorous but also a compelling read—congratulations once again! We're happy to report that this issue received a significant increase in submissions from early career authors, and we can't wait to announce the next winner.

International Recognition for Lifelong Contributions

This issue also shines a spotlight on a deeply respected member of our community—Professor Renato Padovani—who was honoured with the Spirit of Abdus Salam Award by the Abdus Salam International Centre for Theoretical Physics (ICTP). This prestigious award recognises his lifelong commitment to developing medical physics education in low- and middle-income countries, most notably through his leadership in establishing the Advanced Master in Medical Physics programme.

Professor Padovani's work is a shining example of how one individual can help nurture an entire generation of professionals. His story, captured beautifully in an interview by Slaven Jurković, is not to be missed.

Enjoy exploring another exciting edition of EMP News—and here's to a summer filled with rest, inspiration, and sunshine!

Warm regards,
Sasha Ivashchenko
Chair, EFOMP Communications and Publications Committee

Sasha Ivashchenko, MPE at the Department of Nuclear Medicine and Molecular Imaging of the University Medical Center Groningen, chair of the CP committee 2024-2025.

EFOMP President's Report

Let’s Get Ready for ECMP 2026: Unite, Innovate, Inspire!

The European Congress of Medical Physics (ECMP) is a biennial event that rotates between different countries in Europe and has as its main purpose the advancement and dissemination of medical physics technology and knowledge, and the promotion of the medical physics profession in Europe and worldwide. This year’s theme ‘Advancing Healthcare through Physics: Bridging Science and Patient Care for a Sustainable Future’ represents a critical intersection of scientific discovery and patient, staff and public care, where cutting-edge technology and innovative methods are reshaping the landscape of modern medicine and expanding its horizons. At its core, the integration of physics into healthcare improves diagnostic accuracy, treatment efficacy, safety, and overall patient outcomes across the healthcare spectrum. Medical imaging technologies such as X-ray, CT, MRI, US, PET are prime examples of how physics has revolutionised the way healthcare professionals visualise the human body and pushed the boundaries of what is possible to achieve.

ECMP brings together not only a large community of medical physicists from academia, clinics, industry and research, but also a wide range of other healthcare professionals. This convergence creates a unique platform for interdisciplinary collaboration and paves the way for a holistic and proactive approach to advancements, adaptive strategies, economic, social and environmental sustainable practices of the global healthcare system. With growing healthcare demands and challenges, the need for cost-effective, efficient, low risk, and eco-friendly solutions has never been more pressing. The collaboration between medical physicists, medical doctors and other healthcare professionals, engineers, statisticians, computer scientists, AI developers, patient groups, regulators and stakeholders will continue to drive breakthroughs that not only improve the lives of individuals and ensure safety and wellness, but also contribute to a more sustainable planet. During ECMP 2024 in Munich, Germany, I was presented with a traditional Spanish «Mantilla», by ECMP 2024 president Yolanda Prezado symbolising the handover of leadership and the anticipation of the upcoming congress in Valencia, Spain.

Figure 1. Efi Koutsouveli, presented with a traditional Spanish Mantilla at the ECMP 2024 in Munich.

Scientific chairs Joao Seco and Jose Perez Catalayud together with the members of ECMP26 scientific committee and our dynamic Early Career Community, are designing a comprehensive and future focused scientific programme. Topics will highlight energy-efficient medical technologies, telemedicine, artificial intelligence driven clinical solutions and concerns. These leading-edge innovations streamline healthcare delivery by reducing waste, optimising resource allocation, and ultimately paving the way for a sustainable healthcare system for all that meets the needs of current and future generations while ensuring high-quality, human-centred care around the world and beyond. ECMP26 will feature joint and intersect sessions in collaboration with affiliated European and International societies and patient organisations. These sessions aim to bridge disciplines, amplify patient voices, and highlight the essential role of working in teams to improve care, communicate better and innovate.

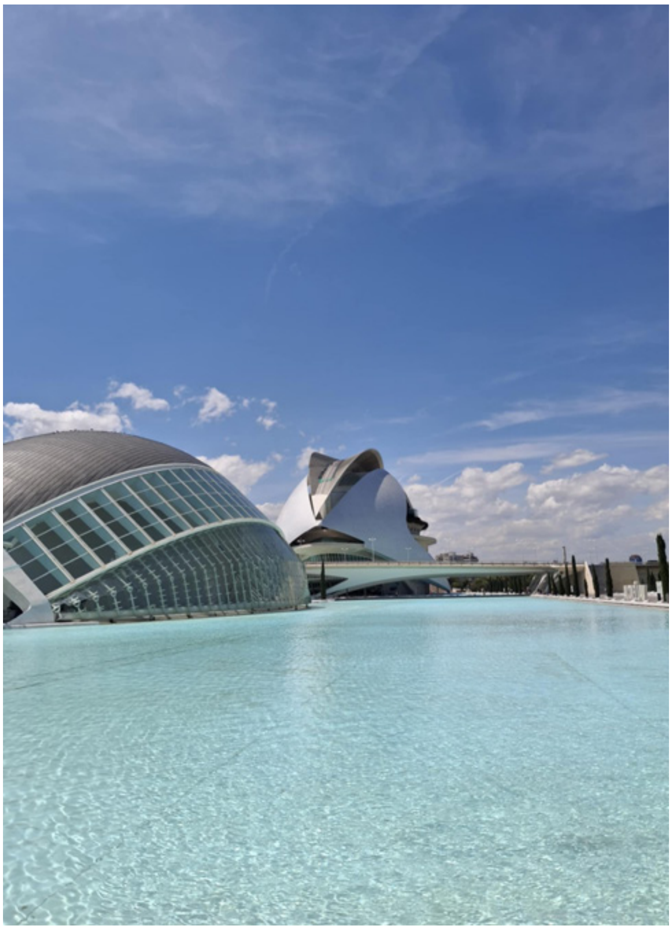


Figure 2. View on Valencia.

The Do-It-Yourself (DIY) Fair at ECMP 2026 will provide a platform for the congress participants to showcase do-it-yourself -solutions in medical physics. This exciting novelty was first introduced in Dublin in 2022 and has since evolved into a standard feature of the ECMP congresses. The enthusiastic response from the community demonstrated the value of showcasing grassroots innovation and practical creativity, turning the DIY Fair into a must-see section that celebrates the hands-on spirit and problem-solving mindset of medical physicists across Europe. These solutions include eg. phantoms, software, open source solutions, hacks, 3-D printed solutions and ways of automating tasks. The fair offers visibility, facilitates networking and helps share witty solutions to the many needs. We also welcome submissions that have previously been published or presented elsewhere. Videos will be uploaded on the congress website (ECMP24 videos) and at the end of the congress will be reachable via the EFOMP e-Learning platform eLEMENT.

ECMP26 will be hosted by the Spanish Society of Medical Physics (SEFM) and its President Maruxa Pérez Fernández in Valencia at the Palacio de Congresos. The city earned the European Green Capital 2024 title due to its past and current achievements in the field of sustainable tourism, climate neutrality, as well as fair and inclusive green transition. Valencia has been centering its activities around building a friendlier city for future generations and offers a perfect blend of vibrant urban life, traditional Mediterranean flavours, and a rich cultural heritage. We extend our sincere thanks to the local organising committee for their dedication and hard work in preparing what promises to be an outstanding congress. City of Arts and Sciences (Ciutat de les Arts i les Ciències) is a must. Work of the Valencian architect Santiago Calatrava, several of its buildings have become icons in the city. It is a scientific and cultural leisure complex which can be enjoyed with family or friends, covering around two kilometres of the former riverbed of the River Turia.

Since its foundation in 1980, EFOMP has championed the value of friendship, unity and international collaboration. In the spirit of looking beyond national borders, ECMP26 welcomes in Valencia the Polish Society of Medical Physics (PTFM) and its President Tomasz Piotrowski. This gesture reflects our shared commitment to strengthening ties across Europe, exchanging expertise, and building a strong medical physics community that works together for the benefit of patients and healthcare systems everywhere.

Let's gather in Valencia on September 26 to synchronise our efforts towards a biocentric sustainable health system that is more accurate, accessible, empathetic and resilient in the face of an increasingly complex and kinetic world.

Stay informed and be part of the journey — follow the official ECMP 2026 congress website for the latest updates on the scientific programme, registration details, abstract submissions, and more exciting announcements! #ECMP26 https://ecmp2026.efomp.org/

Efi Koutsouveli a Medical Physics and Radiation Protection Expert, has worked at Hygeia Hospital in Athens since 1993, specialising in radiation oncology and Hospital Quality Management Systems. Currently serving as EFOMP's President, she has a strong interest in Oncology Information Systems. In 2019, she received the IOMP-IDMP award for her efforts in promoting medical physics to a broader audience

EFOMP Secretary General Report

EFOMP Governing Committee Updates

As I am writing this article, I am preparing for the Spring Officers meeting which will be held on 23rd of May in Trieste, Italy. It's been a busy 3 months since my last article in EMP news. I got the opportunity to represent EFOMP at the European Congress of Radiology (ECR). In this edition of EMP news, you can read a summary of EFOMPs participation at ESR by our Early Career Vice Convener Antonio Jreije who was present with me at ECR. The EFOMP Board elections for Vice President, Secretary General, Treasurer as well as Vice Chair positions for our Education and Training and Scientific Committees were launched in March. The response has been amazing from our National Member Organisations (NMOs) which makes my job of organising the elections difficult with multiple candidates applying for some positions. I wish all the candidates the best of luck in the elections. As our Past President, Paddy Gilligan informs me, he was not elected on the first occasion of applying to be an EFOMP Officer so don't let that put anyone off for reapplying in the future!

EFOMP SIGs Updates

In early April, the EFOMP Board held a joint meeting with Steering Committee representatives from all our SIGs alongside our Projects Committee Chair and Secretary. This meeting was held to encourage interactions between EFOMP SIGs and the Projects committee and facilitate all our SIGs working together. EFOMP has six SIGs in operation, and you can read about them here. All NMO and individual associate members are eligible to join.

Figure 1. 2nd Symposium on Molecular Radiotherapy Dosimetry.

Our latest EFOMP SIG, the Magnetic Resonance Imaging SIG held their kick off meeting at the end of March. There are already 65 members in this SIG and the enthusiasm shown by the attendees at the kick off meeting gives me great confidence that this SIG will be extremely productive and will grow quickly as time passes. The elections for the Steering Committee of this SIG are completed and check out our website and social media for further updates. Our SIGs are busy preparing webinars, ESMPE schools and 2nd Symposium on Molecular Radiotherapy Dosimetry. Check out the website for more information about the symposium.

The first edition of 2025, ESMPE on Radionuclide Internal Dosimetry held in Prague in February was a huge success with over 120 participants online and in person. Our next school on Proton Therapy will also be held in Prague and registration will close in early July so please make sure to register on time. There will be an opportunity for those attending on site to visit a proton centre! Details on all our schools are available here.

Following the EFOMP model of involving all National Member Organisations and reaching the four corners of Europe we are delighted to announce that we will hold our first ESMPE school in Zagreb in September 2025 and we will shortly be announcing new locations for 2026!

Latest news on EFOMP Project Involvement

Figure 2: CARE Project Logo

The European Institute for Biomedical Imaging Research (EIBIR), in partnership with EFOMP, EARL, and ESR, has been awarded the European Commission Tender for the CARE project ("SAMIRA Study on criteria for acceptability of medical radiological equipment"). Running from November 2024 for two years, the project is led by Monika Hierath (EIBIR) with scientific coordination by Marco Brambilla (EFOMP). Its goal is to update the criteria for the acceptability of radiological equipment considering recent advances and regulatory changes since the 2012 Radiation Protection Series N° 162. Early contributions from NMOs via a recent survey are acknowledged and appreciated.

EUTERP Board Updates

Figure 3. CARE Project Logo

The EUTERP Foundation is recognised for its focus for radiation protection training information for Radiation Protection Experts, Radiation Protection Officers and radiation workers. We would like to thank Julie Lucey (Ireland) who recently finished her term as secretary on behalf of EFOMP and congratulate Jorge Isidoro (Portugal) who was recently appointed following the EUTERP election process as a board member of EUTERP. Jorge will continue the great work of Julie in representing EFOMP. I had the pleasure of being invited by Jorge to take part in the FISMED 2024 meeting in Fatima, Portugal (see figure 4). I know his enthusiasm for radiation protection training will ensure that medical physicists will continue to be involved in EUTERP. EUTERP recently published their own newsletter on their recent activities and you can read it on their website.

Figure 4. Me pictured with Jorge Isidoro and other speakers/organisers at the FISMED 2024 Congress in Fatima, November 2024.

Thank you for reading my updates and please get in contact secretary@efomp.org for any queries. I hope everyone finds some time to enjoy some relaxation time during the summer months and I look forward to meeting our NMO delegates at our Annual Council Meeting in Zagreb on the 20th of September.

Brenda Byrne is a Principal Physicist working in the Mater Misericordiae University Hospital, Dublin, Ireland. Her primary areas of interest are diagnostic radiology, nuclear medicine and radiation protection. She has been a registered radiation protection adviser (RPA) since April 2000 and is a recognised medical physics expert (MPE). Brenda is the current Secretary General of EFOMP and Past Chair of the EFOMP Professional Matters Committee.

Physica Medica: Editor's Choice

For this summer issue of EMP News I selected the following 4 articles, recently published in Physica Medica (EJMP) which particularly attracted my attention.

C. Oancea, et al. Dosimetric and temporal beam characterization of individual pulses in FLASH radiotherapy using Timepix3 pixelated detector placed out-of-field.

Phys. Med. 2025;129: 104872, doi.org/10.1016/j.ejmp.2024.104872.

To support the advancement of FLASH radiotherapy - the promising but challenging technique that delivers radiation at ultra-high dose rates to reduce damage to healthy tissue - this study evaluates a non-invasive detection approach using the Timepix3 pixel detector. By tracking secondary particles with nanosecond time resolution, the method accurately characterizes individual beam pulses and dose-per-pulse delivery. The findings demonstrate a reliable correlation with standard dosimetry, offering a promising tool for precise, real-time monitoring in FLASH treatment environments.

V. Taasti, et al. Proton therapy of lung cancer patients – Treatment strategies and clinical experience from a medical physicist's perspective

Phys. Med. 2025;130: 104890, doi.org/10.1016/j.ejmp.2024.104890.

This study presents Maastro's clinical experience with proton therapy for lung cancer patients using the Mevion Hyperscan S250i system, initiated in 2019. Treatment strategies were adapted to account for tumour motion: patients with minimal motion ("small movers") were planned using clinical target volumes (CTVs), while those with greater motion ("large movers") were planned using internal target volumes (ITVs). All treatments employed robust optimisation and were delivered under free-breathing conditions. A total of 379 patients were treated, with continuous improvements in beam configuration, planning techniques, and workflow contributing to increased treatment efficiency, shorter session times, and reduced radiation exposure to critical organs. This straightforward and practice-oriented article offers valuable insights into the clinical implementation of proton therapy for lung cancer, making it relevant for both established proton therapy centres, especially for those using the Mevion system, and for emerging facilities.

F. Fracchiolla, et al. Development and clinical application of a probabilistic robustness evaluation tool for pencil beam scanning proton therapy treatments

Phys. Med. 2025;131: 104938, doi.org/10.1016/j.ejmp.2025.104938.

Another study on proton therapy recently drew my attention. This study introduces a probabilistic robustness evaluation (pRE) tool for proton therapy, aiming to provide a more realistic assessment of treatment plan robustness by accounting for real-world uncertainties, including beam delivery, patient setup, and intra-fraction motion. Using data from 12 skull base cases and long-term machine QA, the pRE method was compared with the conventional worst-case robustness evaluation (wRE) used in clinical treatment planning systems. Analysis of over 43,000 dose distributions revealed that wRE settings of 1.0 mm setup and 3.5% range uncertainty best approximated the pRE results at a 95% confidence level. The pRE tool, now integrated into clinical practice, enables more accurate robustness assessments while maintaining feasible computation times.

P. Julkunen, et al. European Federation of Organisations for medical physics (EFOMP) policy statement no 20: The role of medical physicists and medical physics experts in physiological measurement and related therapies

Phys. Med. 2025;130: 104923, doi.org/10.1016/j.ejmp.2025.104923.

Last, but definitely not least, the same as for the previous edition, I selected to highlight the work of the EFOMP working group on the role of medical physicists and medical physics experts in physiological measurement and related therapies.

This policy statement addresses the diverse and evolving role of medical physics professionals (MPPs) in physiological measurement and therapy (PM&T) across various clinical specialties such as critical care, neurology, and audiology. Recognising the variability in MPP responsibilities across European countries, the document aims to guide the harmonisation and advancement of their role. It draws on international experiences, current practices, and future trends to propose a framework of competencies, outlining the knowledge and skills essential for MPPs working in PM&T domains.

Iuliana Toma-Dasu, Editor-in-Chief of Physics Medica – European Journal of Medical Physics.

Abdus Salam Prize for Renato Padovani

It is such a pleasure to interview distinguished colleague and dear friend Renato Padovani. Renato is currently a medical physicist consultant at the Abdus Salam International Centre for Theoretical Physics (ICTP), Coordinator of the Master of Advanced Studies in Medical Physics (MMP), and teacher of radiation dosimetry and radiation protection. He is the former Head of the Medical Physics Department at University Hospital of Udine (Italy), having developed European and Italian clinical and research projects for decades. He has also served as an expert for the International Atomic Energy Agency in various missions and working groups. Renato is co-founder and honorary member of the Associazione Italiana di Fisica Medica (AIFM) and former Secretary General of the European Federation of Organisations for Medical Physics (EFOMP).

Figure 1. Renato Padovani at the graduation ceremony of the 9th cycle of the Master of Advanced Studies in Medical Physics (MMP) in December 2024. The event also marked the 10th Anniversary of the MMP, coinciding with the 60th Anniversary of ICTP and the 100th Anniversary of the University of Trieste.

Just days after our joyful joint venture with Renata Longo and Božidar Casar for the article on the Alpe Adria Medical Physics Meetings (European Medical Physics News, Spring 2025 issue, pp. 77-81), the Abdus Salam International Centre for Theoretical Physics announced that you are the winner of the prestigious Spirit of Abdus Salam Award 2025. The citation reads: “Setting up, organising, and managing a successful and widely recognised Advanced Master in Medical Physics Programme at ICTP is a lifetime achievement. Many medical physicists from developing countries have been trained through this programme, benefiting their countries’ medical diagnostics, therapy procedures, and medical physics communities.”

Once again, my heartfelt congratulations.

How do you feel about the award?

It was truly a surprise. I must thank ICTP Director Fernando Quevedo and Luciano Bertocchi, former head of the ICTP Medical Physics Programme, for involving me in this ambitious project: training trainers in medical physics to support the field’s development in low- and middle-income countries.

Shortly after retiring from Udine Hospital in 2014, I embarked on this second professional chapter. Over 11 rewarding years, I helped develop the programme alongside Luciano and Renata Longo, head of the Medical Physics Section at the University of Trieste. We worked closely with more than 200 students, 30 teachers, and a wide network of medical physics departments providing clinical training.

This extended family now includes over 200 teachers and clinical supervisors, as well as nearly 170 graduates—many active members of the MMP Alumni Association.

Figure 2. Graduates of the 5th cycle (2018-2019) of the Master of Advanced Studies in Medical Physics.

Could you say a bit more about your current role at ICTP and practising medical physics by "other means"?

The development of the MMP programme greatly benefited from the scientific guidance of Ahmed Meghzifene—then Head of the IAEA Dosimetry and Medical Radiation Physics Section—and Slavik Tabakov, Director of the MSc in Medical Physics at King's College London and Director of the College on Medical Physics, the first ICTP medical physics activity. Ahmed, together with the IAEA Technical Cooperation Division, later developed a project to provide financial support for students from low- and middle-income countries (LMICs). This year I will finish coordinating the MMP, with Marco Esposito, Head of the ICTP Medical Physics Programme, taking over. I will continue supporting the programme through teaching and tutoring students.

Figure 3. One of the many hands-on sessions at the Master of Advanced Studies in Medical Physics.

Over the years, I have also been involved in other rewarding initiatives. In 2013, together with Maria Rosa Malisan, a teacher in the MMP, we launched the ICTP Radiotherapy School. This biennial event continues to receive strong support from major organisations—including IOMP, EFOMP, MEFOMP, FAMPO, AAPM, and AIFM—and regularly enrols 30–50 young radiotherapy medical physicists. I also serve as co-director, local organiser, or lecturer for the Joint ICTP/IAEA workshops and the College on Medical Physics. Additionally, I support ICTP Associates during visits, providing guidance on their research and professional activities.

I must also highlight the vital contributions of our colleagues from the Medical Physics Department at Trieste University Hospital—particularly Mario de Denaro, former Head, Mara Severgnini, current Head, and Paola Bregant—who play key roles in teaching and leading practical sessions at the hospital.

That sounds important and demanding work, but also rewarding?

There is a perception that the MMP programme is making a real difference in supporting medical physics development and strengthening healthcare services in LMICs. A recent survey shows many graduates work as clinical medical physicists, teachers, trainers, participate in national and regional IAEA projects, and some serve as experts on IAEA missions. I am pleased the programme is increasingly regarded as a model for establishing Master's programmes elsewhere.

Regarding your other question, I have never found my responsibilities at ICTP difficult to manage, thanks to the motivation of students, teachers, clinical supervisors, and excellent ICTP administrative support. My previous experience and professional relationships developed through EU and IAEA research projects—especially in diagnostic and interventional radiology—and my involvement in IAEA missions and hosting many

IAEA scientific visitors at Udine Hospital, have all been invaluable.

During your long career, you and fellow medical physicists pioneered many key initiatives at national and international levels now commonplace—AIFM, EFOMP, Alpe Adria Medical Physics Meeting (AAMPM)... Can you recall those times?

In Italy during the 1990s, two medical physics societies existed alongside a medical physics section within the radiology society—leading to resource waste and conflict. By the late 1990s, under Leopoldo Conte's leadership, we united all medical physicists into the Italian Association of Medical Physics (AIFM). Today, AIFM is one of Europe's most active medical physics associations with over 2,000 members, stronger regulation, a dozen specialisation schools, and collegial relations with medical associations in radiology and related fields.

At an EFOMP Council meeting in Ljubljana in 2002, with Werner Schmidt (Austria) and Božidar Cašar (Slovenia), we discussed creating more regional collaboration opportunities. We organised the first meeting in Udine in 2003. Nenad Kovačević (Croatia) hosted the second in Opatija in 2005, involving four national associations. This evolved into the Alpe-Adria Medical Physics Meeting (AAMPM), now in its 12th edition and jointly organised by AIFM and ICTP in Trieste, bringing together physicists from seven countries. EFOMP officers and council members regularly attend, maintaining European connections.

I re-engaged with EFOMP in 2007 as Secretary General under President Alberto Del Guerra. Over eight years and four presidents, key achievements included joint ownership of Physica Medica with AIFM, enhancing it as a respected international journal.

Discussions began on amending EFOMP Statute to become an association of individuals. Though ongoing, progress includes the Individual Associate Member (IAM) status under Marco Brambilla's presidency and organising the European Congress of Medical Physics (ECMP) under Peter Sharp, with the inaugural congress in Athens in 2016, a milestone for EFOMP.

Lastly, the European Commission project on the Medical Physics Expert role produced the EU publication RP 174 supporting Directive 2013/59/EURATOM, defining roles, education, and training requirements for Medical Physicists and Experts. It remains vital for professional advancement and harmonisation in Europe.

None of this would be possible without recognition as a medical physicist. Was medical physics your love at first sight or did it develop over time?

I graduated in 1972 when few medical physicists existed in Italy. Medical physics was largely ignored in physics faculties. My interest began while accompanying my aunt to radiotherapy for gastrointestinal cancer treated with kilovoltage therapy, a treatment with severe side effects.

Valerio Barbina, a pioneering medical physicist, suggested I undertake a project on thermoluminescence for my thesis, supported by Professor Gianni Poiani at the University of Trieste. This project marked my first real step into medical physics and led to a position at Udine Hospital where I began on-the-job training.

I often reflect on how fortunate I am to have found a profession rooted in science yet dedicated to serving people.

We know what EFOMP is today, but it required much effort. Can you recall EFOMP's beginnings? What were the founders' vision, mission, goals, and challenges?

EFOMP, like the European Union, is a work in progress. Most European medical physicists look forward to a large, unified association of individuals—a true European home for medical physics.

EFOMP already represents the profession well at the EU level, with high-level Congresses and Medical Physics Expert schools. Becoming an association of individuals is a natural next step.

Challenges remain: few independent clinical medical physics departments and Chairs in universities exist in many countries, and scientific activities remain fragmented across societies like ESTRO, EANM, ESMRMB, and ESR.

A stronger, inclusive European association could better support scientific, educational, and professional needs unmet in several countries, unify the community, elevate medical physics as a scientific discipline, and harmonise recognition and professional growth across Europe.

Can you give an overview of the field over your career? What are challenges and opportunities for medical physicists?

I have witnessed a medical revolution. In the 1970s, pioneering Italian medical physicists explored physics applications in medicine, mainly radiation. Applications varied by individual and local interest.
Radiotherapy involved kilovoltage machines, betatrons, and radium implants, requiring dosimetry development and early treatment planning systems. Nuclear medicine saw linear scanners replaced by analogue gamma cameras and early computers for image digitisation. Radiation protection methods and regulations began forming. In diagnostic radiology, medical physicists became active with CT introduction in the late 1970s, focusing on patient dosimetry and quality assurance.

That was the era of on-the-job-trained medical physicists.

Since then, rapidly evolving technologies demand highly specialised physicists with advanced knowledge and skills. A solid physics foundation, rigorous training, and continuous professional development are essential for maintaining and advancing the profession amid growing challenges.

Isolated professionals cannot meet expertise needs, especially in resource-limited countries. Large, multidisciplinary medical physics departments

Slaven Jurković is head of Department of Medical Physics and Radiation Protection at University Hospital Rijeka and associate professor at Medical Faculty of University of Rijeka, Croatia

Celebrating One Year of MEPA: Advancing Sustainable Procurement in Medical Imaging

MEDICAL EQUIPMENT PROACTIVE ALLIANCE FOR SUSTAINABLE HEALTHCARE

On 14th May 2025, we celebrated the first anniversary of the Medical Equipment Proactive Alliance for Sustainable Healthcare (MEPA)—a global, multi-stakeholder initiative founded by COCIR, Vizient, and HealthTrust. MEPA was established to reduce the environmental and social impact of medical imaging equipment through harmonised sustainability criteria.

EFOMP has supported MEPA since its inception. Over the past year, the alliance has brought together healthcare providers, industry associations, and sustainability experts from around the world, including COCIR, ESR, EFOMP, AdvaMed Imaging, MedTech Canada, ABIMED, and major healthcare groups such as Kaiser Permanente. With technical backing from the Global Electronics Council and Clean Production Action, MEPA has made swift progress in reshaping procurement practices within the imaging sector.

One year ago, MEPA introduced the first globally harmonised sustainability criteria for medical imaging procurement. This framework enables hospitals and health systems to embed sustainability into purchasing decisions without compromising clinical performance or patient safety.

The criteria span five key areas:

- Life Cycle Assessment
- Climate Change Mitigation
- Sustainable Resource Use
- Chemicals of Concern
- Social Impact

They are tiered into basic, intermediate, and advanced levels, ensuring adaptability to a wide range of healthcare settings.

Leading procurement bodies such as Vizient and HealthTrust have already adopted MEPA's criteria in their tendering processes, encouraging manufacturers to improve transparency and align with sustainability goals—paving the way for greener innovation in the sector.

Policymakers have also taken notice. Both the World Health Organization and the European Commission have engaged MEPA in policy discussions on environmentally sustainable and climate-resilient healthcare, recognising its pioneering role in linking procurement with sustainability.

Throughout the past year, MEPA has participated in flagship events such as CleanMed 2024 and National Academy of Medicine forums. It has also worked closely with national and hospital-level procurement teams to raise awareness and build capacity for sustainable practices.

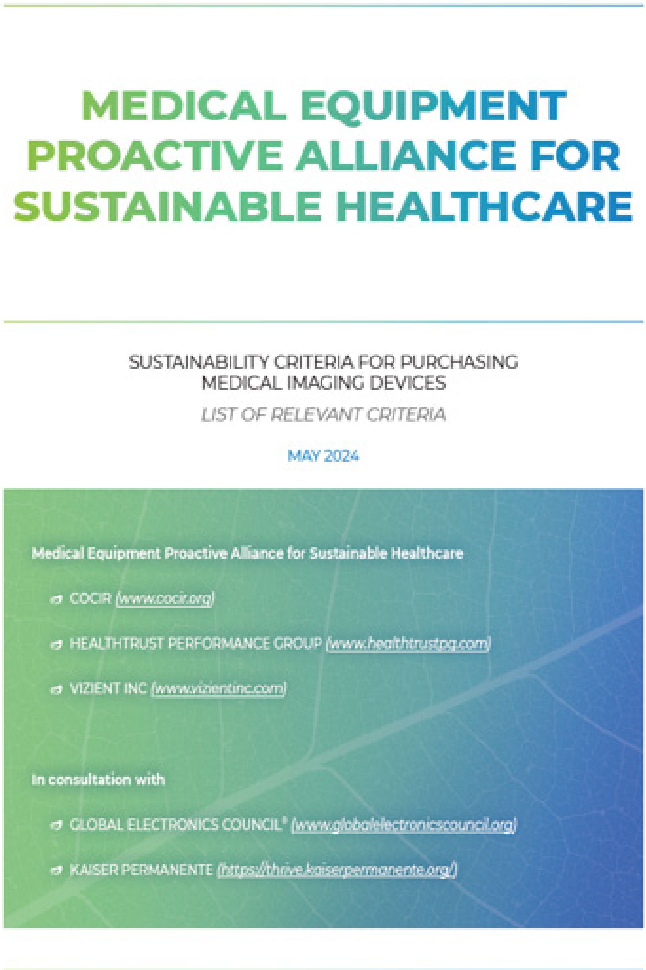
Looking Ahead

In its second year, MEPA will expand its sustainability criteria to additional categories of medical devices. It will also continue to refine implementation guidelines, improve reporting tools, and support hospitals in monitoring energy consumption associated with their imaging equipment.

Conclusion

In just one year, MEPA has evolved from concept to a globally recognised force for sustainable healthcare procurement. By aligning the efforts of hospitals, regulators, manufacturers, and sustainability experts, MEPA is helping to lower the carbon footprint of medical imaging while setting a precedent for responsible innovation across the broader medical technology sector.
As healthcare systems face growing pressures to be both environmentally and economically resilient, MEPA is ensuring that sustainability becomes a core consideration—not an afterthought—in medical device procurement.

For more information, please visit www.mepaalliance.org.


MEDICAL EQUIPMENT PROACTIVE ALLIANCE FOR SUSTAINABLE HEALTHCARE

SUSTAINABILITY CRITERIA FOR PURCHASING MEDICAL IMAGING DEVICES

LIST OF RELEVANT CRITERIA

MAY 2024

Medical Equipment Proactive Alliance for Sustainable Healthcare

- COCIR (www.cocir.org)
- HEALTHTRUST PERFORMANCE GROUP (www.healthtrustpg.com)
- VIZIENT INC (www.vizientinc.com)

In consultation with

- GLOBAL ELECTRONICS COUNCIL® (www.globalelectronicscouncil.org)
- KAISER PERMANENTE (https://thrive.kaiserpermanente.org/)

Riccardo Corridori is Policy Manager at COCIR, the European trade association representing the medical imaging, radiotherapy, health ICT and electromedical industries. He supports COCIR's policy and advocacy work on digital health, sustainability, and health technology assessment, engaging with EU institutions and stakeholders to promote innovation and efficiency in healthcare systems.

EFOMP Cooperation with ESR Audits and Standards Subcommittee

In the autumn of 2023, I was nominated as a representative of the EFOMP to cooperate with the Audits and Standards Subcommittee of the European Society of Radiology. I participated in the work of the Subcommittee (led by: Prof. Roman Klockner) related to the creation of an updated new version of the ESPERANTO ESR Guide to Clinical Audit in Radiology to a version named AUDITRAD: Esperanto – Guide to Clinical Audit in Radiology. My work concerned the revision of competences and tasks performed in radiology by a medical physicist, which should be checked during clinical audits.

Clinical audit is particularly important to radiologists and all professionals within the multi-professional imaging team, not only because it is an established and useful tool in healthcare which should be part of medical services across Europe, but also because of its incorporation into the Medical Exposure Directive 97/43/Euratom, which was subsequently replaced by the BSSD (Council Directive 2013/59/Euratom, which comprehensively addresses the use of ionising radiation.

CLAUD-IT is a 36-month project (September 2024 – August 2027) co-funded by the European Union under the EU4Health programme 2021–2027 (EU4H-2023-PJ-05

The project developed guidelines for clinical audit in nuclear medicine and expanded the 3rd edition of ESPERANTO - named AUDITRAD - Guide to Clinical Audit in Radiology.

The announcement of the new European guidelines for clinical audits in radiology – AUDITRAD took place during the European Congress of Radiology in Vienna, which took place from 26/02/2025 to 02/03/2025.

AUDITRAD - Guide to Clinical Audit in Radiology be found below the link.

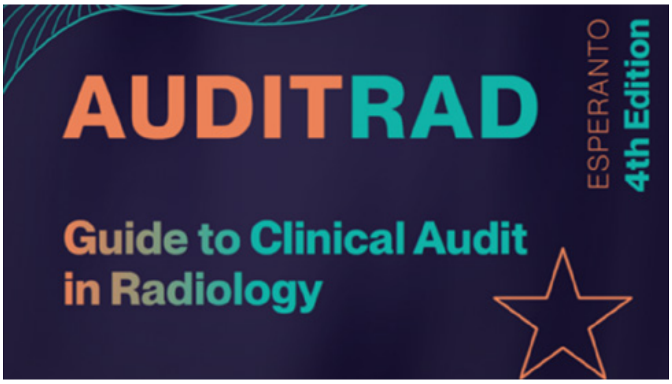


Figure 1. Auditrad guide to clinical audit in radiology poster.

Kamil Łukasz Kisielewicz, PhD, is an Assistant Professor at the National Institute of Oncology, Krakow Division.

Meet the New Chair: Artificial Intelligence SIG

Artificial Intelligence (AI) has started to change our profession. In order to address this development, EFOMP's Special Interest Group (SIG) on AI was established last year. Nine Steering Committee members were elected in October 2024, among those the three Board members interviewed for this article. They speak about their motivation to commit to this role and their vision of the SIG for the following three years.

Dimitris Visvikis (DV, Convener) is a Director of Research with the French National Institute of Health and Medical Sciences (INSERM) and the director of the Data Sciences and Healthcare technologies laboratory (LaTIM) in Brest. He is also the current chair of the EFOMP projects committee and the past chair of the EANM physics committee. He has extended experience as a MPE in Nuclear Medicine over the past 25 years. His research activities have been in quantitative nuclear medical imaging, including image analysis and reconstruction algorithms as well as motion management and radiomics in multimodality imaging. In the last five years he has worked in the development of deep learning algorithms in relation to most of these areas.

Oliver Diaz (OD, Vice Convener) is an associate professor in Computer Science at the University of Barcelona, Spain. He has been actively involved in medical physics working groups of key professional organizations including EFOMP, AAPM, and SEFM. As an academic, he has contributed to multiple AI courses and currently focuses his research on developing (trustworthy) AI applications within oncology.

Marco Meinschad (MM, Secretary) is a Medical Physicist, working in the field of radiation oncology at the University Hospital of Salzburg, Austria. He is part of several working groups of the Austrian Society for Medical Physics (ÖGMP) and the International Society for Radiation Oncology Informatics (ISROI). He has already introduced AI tools into clinical routine and created workflows for the clinical use and quality assurance.

Can you tell the readers something about yourself and the SIG?

DV: I am a director of research with INSERM (French National Institute for Health and Medical Research) at the Laboratory of Medical Informatics in Brest. Within our activities 80-90% of the projects concern the development and application of AI in medical sciences including the field of medical physics. I have initiated the creation of this SIG within EFOMP since I believe that we need to have a unique place within our organisation that can be used to spearhead all of the initiatives necessary for making sure that Medical Physics Experts have a strong voice in all aspects concerned by AI and its implementation in everyday clinical practices.

OD: I am an associate professor in Computer Science at the University of Barcelona, where I teach and conduct research on Artificial Intelligence applied to healthcare. I've collaborated with EFOMP's AI working group in the last years, developing publications on AI training and requirements within the medical physics community. The AI SIG was established to enhance interaction and communication about AI's appropriate use and needs in our field.

MM: I am a Medical Physicist, working in the field of radiation oncology in the University Hospital of Salzburg, Austria. My interest in AI picked up 4 years ago, when I started testing an AI contouring software that was in the late development phase. At my former workplace I have already introduced AI contouring into clinical routine and will do so soon for my current employer.

Why did you decide to apply for the steering committee?

MM: I have realized that there are many open questions and close to zero guidelines on how to choose AI systems and implement them into a clinical routine. Also many people are neither aware of the inherent strengths nor the weaknesses of AI tools. Therefore, I want to do my best to avoid automation bias (i.e. trusting the AI too much) and implement workflows with AI that still assure the quality of patient treatments. I think I can contribute best to all of these points (acceptance testing, QA, designing safe workflows and raising knowledge and awareness about AI) by being part of the steering committee.

OD: My goal is to contribute to our community by facilitating AI integration into clinical practice, ultimately improving patient care and supporting healthcare professionals. I believe strategic guidance can help translate cutting-edge AI technology into meaningful clinical applications.

DV: I would like to be able to contribute as much as possible with ideas and suggestions for the future directions that the works of the SIG should follow. This is what has motivated my application to be a member of the steering committee.

Do you have a vision or things you would like to achieve in the upcoming three years for the AI SIG?

MM: Medical Physicists play a crucial role for the safe implementation and use of hard- and software in clinical environments. In my opinion this is also true with regard to AI tools. This SIG should empower Medical Physicists to fulfil this role and give them the information, guidelines and education they need. Also the image of Medical Physicists as the responsible group for AI tools should be promoted.

DV: The activities of the SIG over the next couple of years should concentrate on specific topics and prioritize its activities with a structure in corresponding focus groups. The areas of interest should include: the development of QA/QC protocols for AI software deployment in clinical practice, understanding the legislation and legal framework of AI deployment in clinical practice and integrating appropriate codes of practice, education and training activities in the field of AI for the different medical physics disciplines.

OD: The AI SIG represents a crucial platform for our community to share perspectives, voice concerns, and shape the future of AI in medical physics. We aim to create an inclusive space where members can contribute their insights and collectively guide the responsible implementation of AI technologies.

Why should people join the AI SIG?

MM: The field of AI is evolving and changing at an incredible pace – and much faster than any governmental body can react with regulations. Those tools will be implemented and change our work lives. Therefore, I consider it important to be on the fore-front of this change, and actively shape the way how AI can be used in a safe manner.

OD: The field of AI is evolving rapidly. By joining the AI SIG, members will gain first-hand access to the latest information, trends, and developments in AI within medical physics, ensuring they remain at the forefront of this transformative technology.

DV: For contributing to the role that MPEs should play in this vastly evolving field but also keep ahead of any future developments and legislative requirements to come.

Sonja Wegener is a Medical Physicist at the University Hospital Würzburg, Germany, and member of the EFOMP's Communications & Publications Committee. She conducted the interview.

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SIMPLERAD: SAMIRA Study on the Implementation of the Euratom and the EU Legal Bases with Respect to the Therapeutic Uses of Radiopharmaceuticals

Therapeutic radiopharmaceuticals are a very special class of drugs that require specific considerations. As such, their preparation, handling and use are regulated in two separate legal frameworks: medicinal authorisation and supervision are laid out in the EU's pharmaceutical or medical device legislation, while radiation safety is regulated under Euratom radiation protection legislation.

SIMPLERAD aimed to improve the understanding of the links and interdependencies between the European pharmaceutical legislation and Euratom radiation protection requirements, to highlight potential barriers to implementation, and to propose practical guidance and recommendations to advance a coherent implementation of these requirements with respect to the therapeutic use of radiopharmaceuticals. This study was carried out by a consortium consisting of the European Institute for Biomedical Imaging Research (EIBIR), the European Association of Nuclear Medicine (EANM) and the European Federation of Organisations for Medical Physics (EFOMP). The experts nominated by EFOMP were Manuel Bardiès, Steffie Peters, and Caroline Stokke—all of whom served on the Steering Committee of SIG_FRID during its first term.

Key Findings, Conclusions and Recommendations

A literature survey, an in-depth analysis of the regulatory status of therapeutic nuclear medicine in seven European countries and an elaborate survey of current practice across Europe provided evidence of missing interactions between European Medicines Agency (EMA) guidance documents and requirements of Council Directive 2013/59/Euratom (Basic Safety Standards Directive - BSSD), particularly concerning the implementation of article 56 of the BSSD. This leads to interpretation issues and varied legislative processes across Europe. Based on these observations, the SIMPLERAD consortium identified ten items that limit the coherent implementation of the European legal requirements with respect to therapeutic nuclear medicine:

1. Disconnection between Marketing Authorisation of Radiopharmaceuticals and the BSSD
2. Differences in Interpreting and Implementing the BSSD in the Context of Therapeutic Nuclear Medicine
3. Lack of Resources for Dosimetry
4. Differences Regarding Status of MPEs (e.g., Training, Requirements, Level of Experience, Responsibilities) between Member States
5. Heterogeneity of Dose Constraints and Patient-Release Criteria between Member States
6. Heterogeneity of Management of Radioactive Waste across Member States
7. Differing Guidance from Professional Societies for Clinical Practice
8. Differing Regulatory Procedures between

Member States for Drug Development and Clinical Trials
9. Insufficient Specialist Knowledge Concerning Nuclear Medicine within Competent Authorities Regarding EU Pharmaceutical and Medicine as Well as BSSD-Related Regulations
10. Differences among Opinions of Professionals Concerning Dosimetry and the Necessity Stipulated in National Legislation and Guidance

Recommended actions include regulatory measures, and suggestions for improving material and staff resources. Efforts to further demonstrate the added value of patient-specific optimisation of treatments are recommended. Furthermore, suggestions are made for a diverse palette of measures to improve understanding of current regulations, including a proposal for explanatory documents pertaining to the implementation of article 56.1 of the BSSD in the context of radiopharmaceutical therapy and the interconnection of the BSSD with existing and planned Pharmaceutical and Medical Devices Regulation (EU 2017/745; [2]). More details on suggested actions can be found in the SIMPLERAD final report

Furthermore, the SIMPLERAD consortium suggests the following more general measures:

- Create and support specialised treatment and training centres, i.e., networks of excellence, with advanced knowledge on quantitative imaging and dosimetry
- Promote and support accreditation programs for therapeutic nuclear medicine and dosimetry
- Collate dosimetric and response data from centres across Europe to develop and generate large-scale database studies
- Initiate studies on the impact of individual treatment planning of radiopharmaceutical therapy on patient outcomes

We, the EFOMP experts of SIMPLERAD consortium, therefore strongly believe that the measures will contribute to the continued development and implementation of personalised radiopharmaceutical therapies in compliance with all relevant regulatory frameworks.

Manuel Bardiès is a senior researcher within the French Institute of Health and Medical Research (INSERM) in Montpellier, France. He's currently chairing the Special Interest Group for Radionuclide Internal Dosimetry (SIG_FRID).

Steffie Peters is an MPE at Radboud University Medical Center Nijmegen, the Netherlands, focused on nuclear medicine. She is part of the steering committee of the SIG_FRID.

Caroline Stokke (MPE, Assoc. Prof) is head of nuclear medicine physics and the Theranostic Imaging research group at Oslo University Hospital, Norway. She is president of the Norwegian Association of Medical Physics and chairs the EANM dosimetry committee. Stokke was part of the SIG_FRID steering committee during SIMPLERAD.

AI Meets HyperArc: Automated AI Contouring in HyperArc Radiosurgery for Brain Metastases

Contouring brain metastases remains a well-documented challenge in radiosurgery, particularly in cases involving multiple lesions. Manual delineation can be time-consuming and varies significantly between observers, which may impact workflow efficiency and treatment consistency [1]. With the increasing complexity and volume of cases, there is growing interest in automated tools that could support clinicians in streamlining this critical step of the planning process.

Now, the integration of advanced deep-learning technology is poised to redefine how we approach contouring in radiosurgery. The new AI-based contouring solution from Siemens Healthineers is designed to assist in contouring brain metastases and key organs at risk (OARs) for radiosurgery treatments based on contrast-enhanced T1-weighted MRI images.

The next-generation algorithms, on syngo.via RT Image Suite and AI-Rad Companion Organs RT** processes MRI images to automatically detect brain metastases, contour them, and label them as Gross Tumor Volumes (GTVs). In parallel, it identifies and accurately contours key organs at risk (OARs), such as the brainstem and optic structures. All data is output as an RT Struct file, ready to be transferred directly into the treatment planning system (TPS).

Once imported into Eclipse, HyperArc takes over—offering a fully integrated solution for high-precision, single-isocenter radiosurgery. HyperArc is known for its radiosurgery-specific automation and algorithms, which simplify and expedite treatment planning, even for highly complex multiple metastases cases [2].

The combined AI-HyperArc workflow represents a significant leap forward in treatment planning. With the AI handling segmentation, clinicians can focus on strategic decision-making rather than manual contouring.

These benefits were clearly highlighted in Prof. Evrim Tezcanli's presentation at the International Oncology Summit taking place right before the ESTRO congress 2025. In clinical evaluations, not only did the AI reduce manual effort and streamline the planning process, but it also identified brain metastases that had been missed during manual review. This added layer of detection offers clinicians greater confidence in the completeness of their target definition, potentially improving patient outcomes.

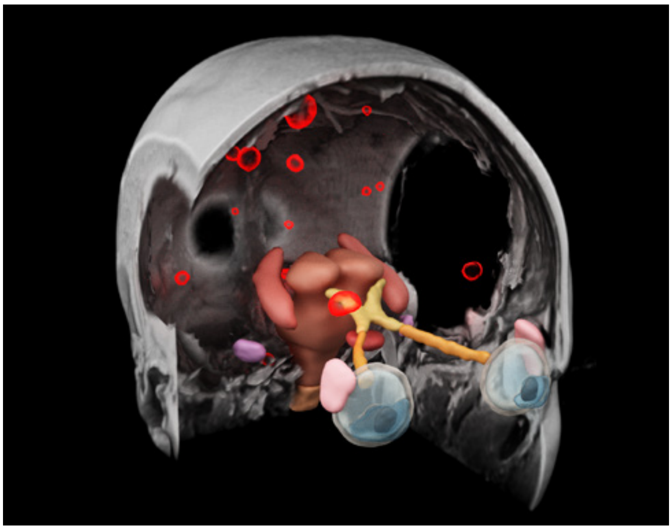


Figure 1. Courtesy: Acibadem Atasehir Hospital, Instanbul, Turkey ***

Together, the AI-based contouring tool for MR images and HyperArc planning system represent a promising step toward simplifying a traditionally complex and time-intensive process. By combining intelligent automation with optimized treatment planning, this workflow has the potential to make even the most demanding multiple brain metastases radiosurgery cases more manageable—from imaging to delivery. We look forward to seeing how this integrated approach can benefit clinicians, and ultimately, patients in the near future.

**syngo.via RT Image Suite VC10 is not commercially available in all countries, and its future availability cannot be ensured. Not for sale in the USA.

AI-Rad Companion Organs RT VA70 is not commercially available in all countries, and its future availability cannot be ensured. Not for sale in the USA.

***Rendering not generated by mentioned software products.

Learn more about deep learning autocontouring

References

[1] Julia Stanley, Peter Dunscombe, Harold Lau, Paul Burns, Gerald Lim, Hong-Wei Liu, Robert Nordal, Yves Starreveld, Boris Valev, Jon-Paul Voroney, David P. Spencer, The Effect of Contouring Variability on Dosimetric Parameters for Brain Metastases Treated With Stereotactic Radiosurgery, International Journal of Radiation OncologyBiologyPhysics, Volume 87, Issue 5, 2013 Pages 924-931, ISSN 0360-3016, https://doi.org/10.1016/j.ijrobp.2013.09.013.

[2] Ruggieri, R., Naccarato, S., Mazzola, R. et al. Linac-based VMAT radiosurgery for multiple brain lesions: comparison between a conventional multi-isocenter approach and a new dedicated mono-isocenter technique. Radiat Oncol 13, 38 (2018). https://doi.org/10.1186/s13014-018-0985-2

Meltem Yilmaz Burkart is a Sr. Product Manager at Varian, a Siemens Healthineers Company. As a Medical Physicist with extensive experience in radiosurgery, with a particular focus on cranial radiosurgery, adaptive radiotherapy and integration of AI intelligence into clinical workflows. With 14 years of background that bridges clinical practice and industry innovation, she works to translate cutting edge technologies into practical, AI driven solutions that improve patient outcomes.

Ivo Driesser is a global marketing manager at Siemens Healthineers, specializing in AI for radiotherapy software. With over 20 years of experience in the field of radiology and radiation oncology, he focuses on deep learning auto-contouring and integrating AI into clinical workflows to aid clinicians.

Diverse Workflows, Flexible Tools: Providence Portland

How one department adopted modern tools to adapt to changes in practice, support their staff, and improve the patient care path.

In the pursuit of continued improvement in cancer care, the field of radiation oncology is constantly evolving. Providence Portland sought out modern solutions to meet the demands of an increasingly complex clinical environment. After evaluating multiple options, the clinical team selected Radformation as their commercial partner of choice for autosegmentation and secondary plan checks to better support their treatment offering and add flexibility and efficiency to their planning workflow.

AI Contouring Improves Planning Throughput
One of the most important additions to their automation toolbox in recent years has been auto-segmentation. The ability to delegate this routine task and reassign their time to careful editing and verification of outputs has promised substantial time savings for departments. Despite having an existing atlas-based solution provided by another vendor, Providence Portland adopted AutoContour after seeing the promise of AI-generated contours.

As physicist Albert Yan lightheartedly puts it, “The dosimetrists aren’t complaining at all about physicians getting their contours done.” Incorporating deep-learning contouring has resulted in improved throughput. According to Yan, “We’re frequently seeing one-day physician contouring task turnaround times.”

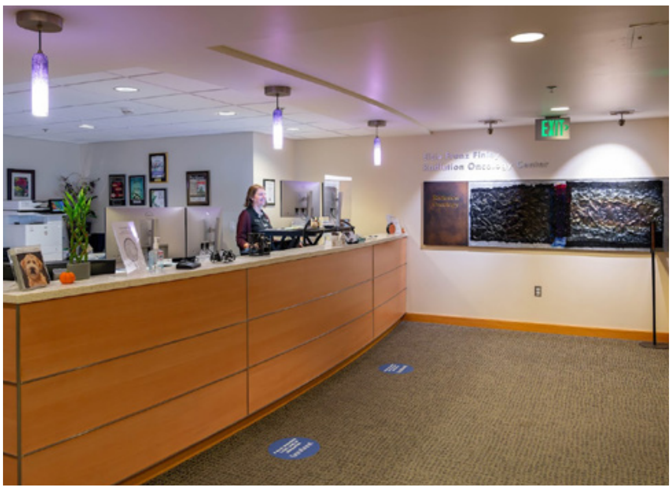


Figure 1. Providence Portland has embraced modern software tools, resulting in faster, more efficient planning task turnaround.

Physician-Driven Contouring for Complex Cases

Even after their treatment planning system began to offer its own deep-learning contouring tools, the team at Providence Portland continued to see value in AutoContour. “We carefully benchmarked the two offerings and concluded that Radformation’s solution consistently delivers more structure models, including those that make our physician’s lives easier,” admitted Yan. “We have retained AutoContour as it provides these additional models. This allows for parallel dosimetrist/physician effort, which further expedites the planning process,” he says.

Of note, the physicians frequently utilize CTV and lymph nodes models, which drives time savings. "I use AutoContour quite frequently, especially for H&N cases where it saves quite a bit of time for lymph node structures,” says radiation oncologist Victor Chen. “On average, it saves about 10-15 minutes per case. For some complex contours, the time savings are even greater.” They also heavily leverage pelvic lymph node models, which are frequently required in prostate cancer cases.

Moving Toward Modern Dose Calculations

The department’s transition to ClearCalc marked another milestone in their journey toward efficiency and innovation. The decision was driven in part by their adoption of a ViewRay MRidian® system, for which their previous software lacked support. But the team also saw that ClearCalc provided the right tools for advanced treatment techniques like VMAT with high dose gradients. The dosimetrists appreciate the ease of use, as well as the ability to access the application via Citrix from wherever.

“We were looking for something more than a 2D calculation, and the ability to choose from multiple dose points is key, eliminating the cumbersome process involved with multiple imports/exports,” says Yan.

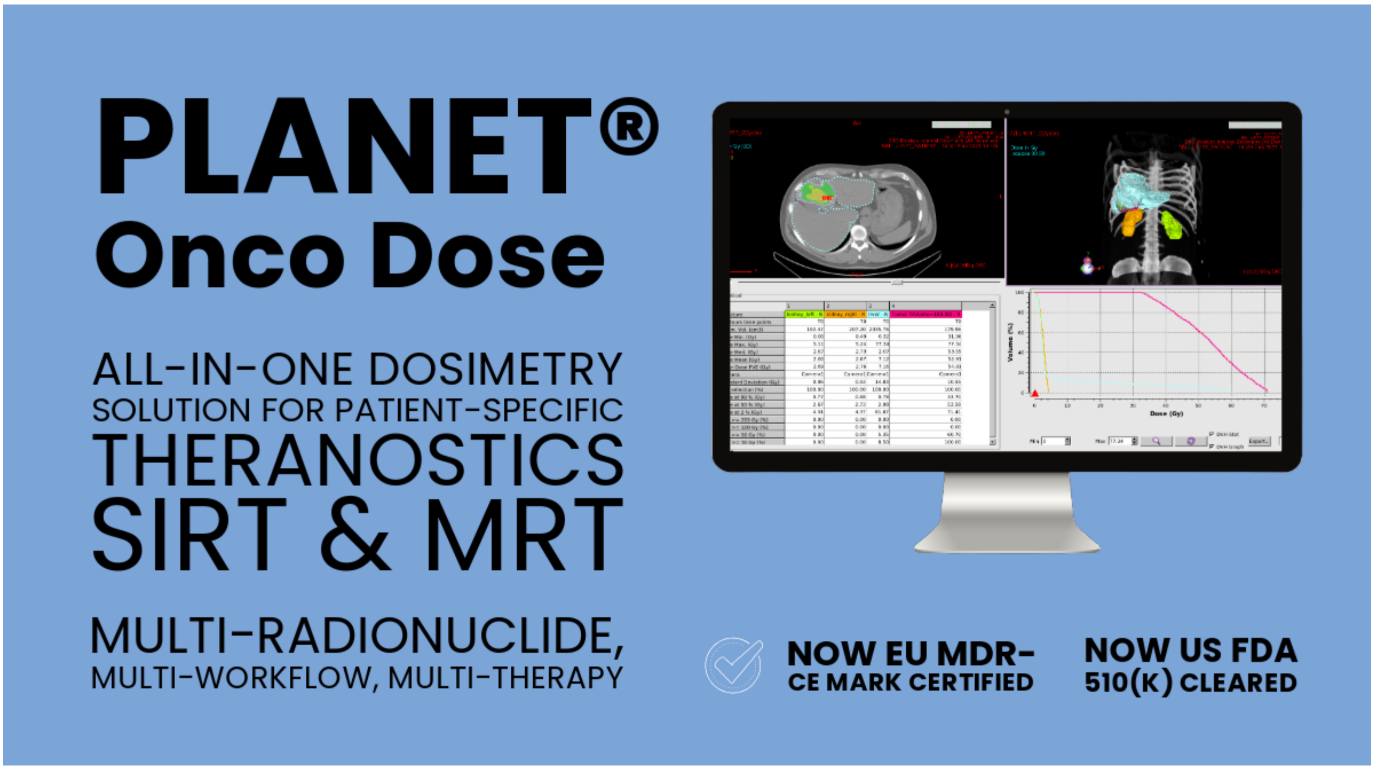
Figure 2. Their previous software solutions lacked compatibility with specialty treatment machines, like their ViewRay MRIdian.

Looking Ahead: A Balanced and Strategic Approach

Providence Portland’s adoption of intelligent solutions underscores their commitment to efficiency and forward-thinking innovation in cancer care. By integrating advanced tools, the team has not only improved their pre-planning workflow but have also met the demands of new modern treatment technologies.

Tyler Blackwell, MS, DABR, FAAPM is a medical physicist at Radformation focused on clinical collaborations and community engagement. Before joining Radformation, he spent a decade working as a clinical physicist. He is active on several committees for the American Association of Physicists in Medicine and volunteers for the American Board of Radiology.

Dosisoft Planet® Onco Dose Receives CE MDR Mark And New FDA 510(K) Clearance



DOSIsoft, leading provider of patient-specific imaging and dosimetry software solutions for radiation oncology and nuclear medicine, proudly announces the latest release of PLANET® Onco Dose version 3.2 – multi-radionuclide, personalized, voxel-based dosimetry platform for SIRT and MRT – now approved for market in EU under CE MDR Mark and in the US with FDA 510(k) clearance.

End-to-end, versatile, vendor-neutral, the novel PLANET® release is specially designed to integrate multi-radionuclide, implement multi-workflow and support multi-therapy.

This advanced software version allows clinics to cover a broader range of therapies by supporting voxel-based dose computation for ^{90}Y, ^{177}Lu ^{166}Ho and ^{131}I isotopes with the flexibility to incorporate new beta/gamma emitters.

Clinicians can benefit from optimized multi-time point and newly introduced single-time point dosimetry workflows - reducing workload, enhancing patient comfort, streamlining clinical processes while ensuring accuracy. Validated against thorough Monte-Carlo simulations, it offers clinical-ready GPU-accelerated performances.

“All-in-one dosimetry solution for Patient specific Theranostics”, PLANET® enables highly personalized treatments including ^{177}Lu-PSMA, ^{177}Lu-PRRT, ^{90}Y or ^{166}Ho radioembolization, ^{131}I therapies, and more.

“It is a milestone achievement and a collective work to provide all answers to the EU notified body and US FDA, Through our reinforced internal Quality System and commitment to the highest standards of safety, performance and compliance, DOSIsoft positions PLANET® Onco Dose, ahead of competition,” highlights Marc USZYNSKI, CEO at DOSIsoft, “We are looking forward to seeing patients worldwide benefit from this safe and effective device in routine clinical use.”

PLANET® Onco Dose is CE Marked under new EU MDR Regulation 2017/745 since February 17th, 2025. Learn more

PLANET® Onco Dose is US FDA 510(k) cleared since March 14th, 2025, expanding previous market clearance to version 3.2 rich feature set. As per FDA general rule for Radiopharmaceutical Therapy (RPT), voxel-based dosimetry solutions are intended specifically for absorbed dose calculation and should only be used with approved radioactive products. Learn more

To learn more about PLANET® Onco Dose, the patient-specific Theranostics solution, visit DOSIsoft at the SNMMI Annual Meeting (Booth #1503, June 21–25, 2025)

References:

[1] About PLANET®
PLANET® Onco Dose Edition 3 is developed by DOSIsoft SA in France. It is a Class IIb CE-marked medical device under MDR (EU) 2017/745 and is US FDA 510(k) cleared. Availability of the product or specific features may vary by country and regulatory approval status.

[2] About DOSIsoft www.dosisoft.com

Founded in 2002, DOSIsoft stands as market leader specialized in dosimetry software in Radiation Oncology and Nuclear Medicine to improve cancer patient safety & treatment quality. DOSIsoft provides the most competitive patient-specific quality assurance and medical imaging solutions in over 600 hospital centers in 60 countries. Spin-off between Gustave Roussy and Curie Institute in France, DOSIsoft constantly innovates in partnership with leading cancer institutes and research centers in the world, like recently through the Thera4Care European project. www.dosisoft.com

Marc Uszynski Chief Executive Officer at DOSIsoft, France. 30-year-experience in product & business development in software, media and digital sectors bringing the company to a next level of international development.

PTW THE DOSIMETRY COMPANY

Ensuring Precision: Quality Control Solutions in Multi-Energy Computed Tomography

In the rapidly evolving field of medical imaging, precision and accuracy are paramount. Multi-energy computed tomography (MECT) offers enhanced material differentiation and improved diagnostics. Ensuring the highest quality of these advanced imaging techniques requires robust quality control measures and appropriate phantoms as outlined in the recently published AAPM Task Group Report 299.

In conventional computed tomography (CT) imaging, which uses a single polyenergetic spectrum, materials with different effective atomic numbers can exhibit identical CT values at the same energy level, making material differentiation challenging. However, multi-energy applications allow for the differentiation of materials with different effective atomic numbers due to their distinct linear attenuation coefficients at both high and low energy levels.

As a phantom specialist with over 30 years of experience, QRM, a PTW company since 2020, offers various solutions for the quality control of all available multi-energy applications (e.g., photon-counting detector CT, dual-layer CT, kV-switching, dual-source CT), for the assessment of image quality parameters, as well as for radiation dose evaluation, as recommended in the AAPM Task Group Report 299.

Phantom Solutions for Testing Dual-Energy, Multi-Energy, and Photon-Counting CT Protocols

The QRM Multi-Energy QA Phantom is designed for evaluating and testing all available multi-energy imaging techniques, providing a comprehensive solution to clinical demands. It includes standard inserts enriched with various contrast media (water and iodine, adipose and iodine) and calcium (water and calcium hydroxyapatite) in different concentrations. Customised inserts or different sets, such as Gadolinium for multi-contrast applications, are also available. Additionally, extension rings or axial expansion sets make this phantom ideal for testing various CT modalities and clinical scenarios, regardless of the manufacturer or scanner model.

An automated analysis software simplifies image quality tests across various spectral CT technologies from different manufacturers. After scanning the QRM Multi-Energy QA Phantom with multi-energy, dual-energy, or photon-counting CT protocols, the software automatically evaluates the image quality parameters. The opaquely numbered inserts of the phantom enable seamless, fast, and accurate evaluation reports for quality control assessments. The software's easy-to-use interface supports inserts made to customer specifications, enhancing assessment capabilities and overall precision.

Simulation of environmental tissues and organs

The QRM Spectral CT Phantom, suitable for the quality control of multi-energy applications, includes 12 inserts for 8 boreholes. It houses different test inserts of solid tissue-equivalent materials or tubes that can be filled with water or contrast media. With its compact design and 100 mm diameter, this phantom can be used in com-

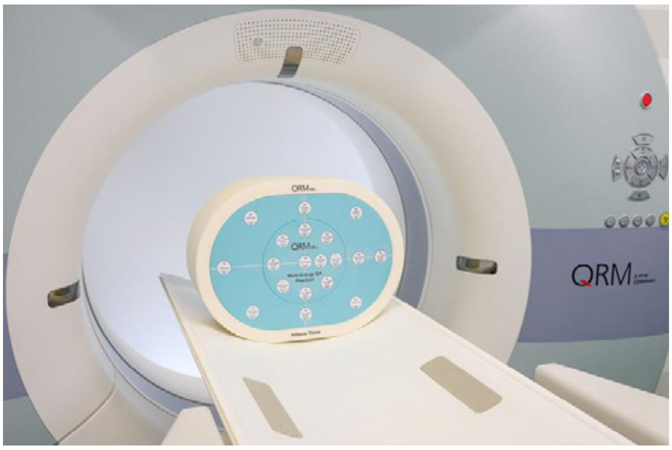


Figure 1. QRM Multi-Energy QA Phantom: Versatile for photon-counting and all spectral CT protocols.

bination with the QRM Thorax or QRM Abdomen Phantom to mimic additional organs and tissues, such as lung tissue, liver, or spleen.

Figure 2. QRM Spectral CT Phantom for different types of multi-energy applications. All materials tested on NAEOTOM Alpha.

Assessment of image quality parameters

The tissue-equivalent QRM Cone-Beam Phantoms (Expert or Basic) consist of different sections, allowing comprehensive evaluation of all essential image quality parameters within a single compact phantom. Performance parameters, including in-plane spatial resolution, modulation transfer function (MTF) in different orientations, low-contrast resolution, contrast-to-noise ratio, in-plane geometrical accuracy, image homogeneity/noise, and CT number linearity (scaling), can all be evaluated in just one scan.

Explore our comprehensive Codes of Practice for clear explanations of the physics and methods used to assess image quality parameters with various QRM phantoms for different X-ray applications.

For a complete overview on phantom solutions compliant with AAPM TG-299 standards, visit the product overview on the QRM website.

Burcu Hiz Temizer is a Physics engineer and holds a Master's degree for Medical Physics. She currently works as a product manager at PTW Freiburg. In this role, she is responsible for developing phantom solutions for diagnostic radiology.

From Concept to Clinical Reality with LUNA 3D SGRT from LAP

In 2024, Röntgenpraxis am Marstall, a private radiotherapy group in Germany, embarked on a transformative journey to enhance patient positioning and monitoring through the implementation of Surface Guided Radiation Therapy (SGRT) using the LUNA 3D system by LAP. As a clinical oncologist and partner at the practice, I am pleased to share our practical experiences, clinical insights, and the collaborative spirit that turned our project into a success story.

A Question of Precision: Why SGRT?

With over 3,000 patients treated annually across five linear accelerators and multiple certified oncology centres, precision and patient comfort are critical to our clinical philosophy. SGRT offers technical advantages—markerless set-up, sub-millimetre accuracy, and enhanced treatment reproducibility—and crucial "soft skills" benefits, such as reducing patient anxiety and improving quality of life through non-invasive procedures.

Making the Choice: A Collaborative and Transparent Process

Selecting an SGRT system requires more than a technical comparison. Our decision-making was truly interdisciplinary. Physicists, radiographers, and clinicians collectively evaluated all vendors via presentations, site visits, and hands-on testing. We prioritised workflow integration, compatibility with existing Elekta LINACs, and ease of use. LUNA 3D excelled in all criteria. Having relied on LAP lasers for years, we trust the company's reliability and technical service.

Implementation: A Logistical and Educational Achievement

Our entire infrastructure was upgraded within ten months from initial discussions to clinical use. LAP's team provided thorough support, aligning IT systems, DICOM-RT interfaces, and room configurations across three sites. The result? A seamless six-week installation covering five LINACs (2 Synergy, 1 Infinity and 2 Versa) and two CT units (1 Siemens go! Sim and 1 Siemens Somatom Confidence). (See Figure 1)

Staff Training: Embracing the Change

Training was key to acceptance. We began with immersive sessions at LAP's headquarters in Lüneburg, Germany, and on-site, role-specific instruction. LAP Academy's digital modules and application specialists ensured high engagement. DIBH modules and future-focused features were introduced with clarity and enthusiasm.

Clinical Integration: From Trial to Triumph

Our staff quickly appreciated the LUNA 3D interface's intuitiveness. Selected patients were treated using LUNA 3D and traditional LAP lasers. Cone Beam CT comparisons confirmed accuracy and reproducibility. By launch, the new system was rolled out across nearly all indications, with immediate buy-in from our multi-disciplinary team. (See Figure 2)

Looking Ahead

We're now testing new immobilisation masks for cranial treatments and implementing LUNA 3D in DIBH, SBRT, and SRS protocols. Beyond technology, this journey underscored a more profound truth: when clinical, technical, and logistical minds unite, innovation becomes achievable and sustainable.

Figure 1. LUNA 3D system implementation.

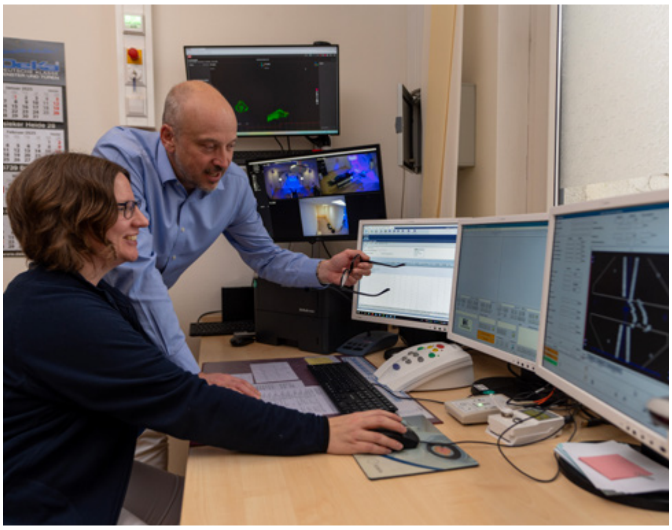


Figure 2. Treatment console.

Martin Bendel is a radiation oncologist and partner at Röntgenpraxis am Marstall, Germany. He is passionate about integrating cutting-edge technologies to improve patient outcomes and treatment precision in radiation oncology.

GOLD STANDARD PHANTOMS

Safeguarding Advanced MRI Through Robust Quality Assurance

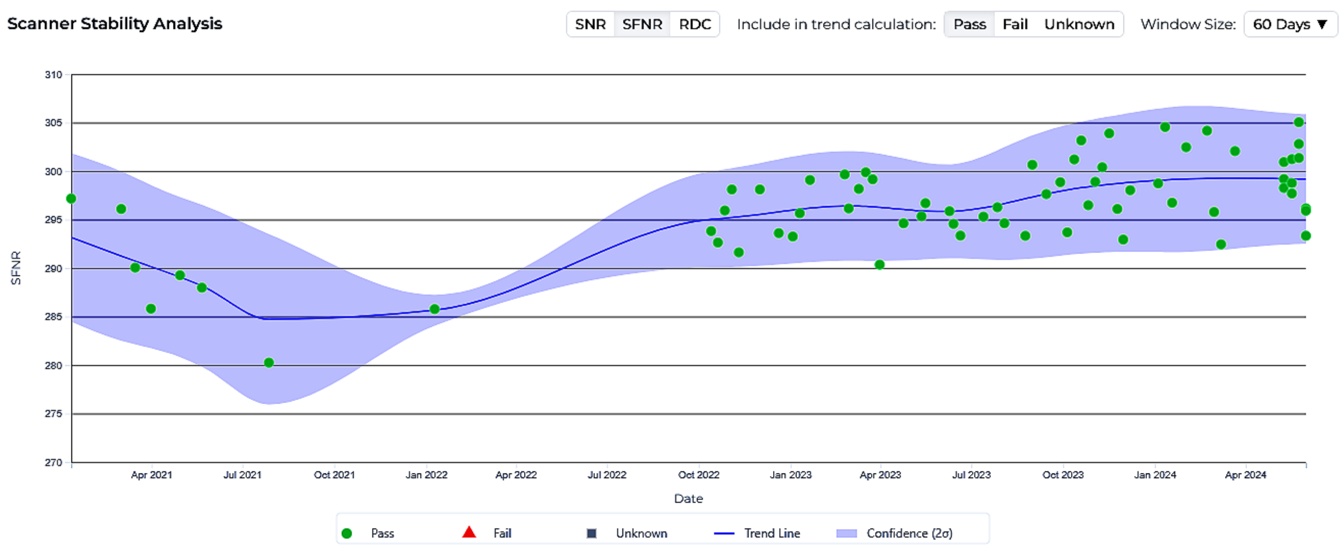


Figure. Signal Fluctuation-to-Noise Ratio report for a specific scanner over time shows an early decline in gradient performance during early to mid-2021. Based on these findings, the site completed a full scanner upgrade in January 2022. Performance has remained stable since.

Magnetic Resonance Imaging (MRI) has long transcended its role as a purely anatomical modality. Today, it occupies a central position in modern neuroscience and clinical research, especially through advanced techniques such as functional MRI (fMRI), arterial spin labelling (ASL), or quantitative susceptibility mapping (QSM), to name just a few. These methods allow for non-invasive investigation of cerebral physiology, promising transformative insights into brain function and pathology. Yet, as MRI evolves into a more quantitative science, it becomes increasingly clear that precision, stability, and reproducibility are not luxuries—they are requirements. Quality Assurance (QA) protocols, long considered auxiliary, must now be brought to the forefront of imaging practice.

The complexity of modern imaging techniques introduces a spectrum of variables: scanner hardware, acquisition protocols, post-processing pipelines, and even operator practices. Each component can introduce bias or drift, particularly problematic in longitudinal and multi-centre studies. The shift from pattern recognition to quantitative assessment demands rigour—rigour that can only be achieved through robust, standardised QA protocols [1].

This need is nowhere more apparent than in fMRI. As demonstrated in the seminal work by Friedman and Glover within the functional BIRN (fBIRN) initiative, scanner temporal stability is paramount [2]. The blood oxygen level–dependent (BOLD) signal, often constituting less than 2% of the baseline signal, is exquisitely sensitive to even minor fluctuations in scanner performance. The fBIRN QA protocol, employing a doped agar phantom and standardised acquisition sequences, enables routine monitoring of critical parameters such as signal-to-noise ratio (SNR), signal fluctuation noise ratio (SFNR), spatial drift, and temporal fluctuations. Notably, their implementation across twelve centres revealed considerable variability in scanner performance prior to QA standardisation—variability that would have compromised the scientific integrity of any pooled fMRI dataset.

Equally important is the longitudinal value of these QA protocols. Changes in scanner hardware, software upgrades, or environmental factors can all subtly degrade data quality. Without QA monitoring, such changes remain invisible yet exert insidious effects, increasing data variance and weakening statistical power. The fBIRN model illustrates how continuous QA can detect and help rectify such issues, stabilising performance across time and geography [2].

In the broader context of quantitative imaging biomarkers, the role of QA becomes even more critical. Indeed, imaging biomarkers must be underpinned by metrological rigour to be credible endpoints in clinical trials [3]. This necessitates not just the harmonisation of acquisition parameters, but also the routine use of phantoms, drift assessments, and inter-site reproducibility studies. Unfortunately, as recent surveys highlight, fewer than one-third of quantitative MRI (qMRI) studies report any form of quality management—a figure that has even declined in recent years [4]. At Gold Standard Phantoms, we thought of doing our own bit for advanced MRI QA. And we recently launched VERIFLUX™, a cutting-edge QA solution developed in alignment with the rigorously validated fBIRN protocol [2]. VERIFLUX™ is designed to provide high-precision, fully automated quality assurance for functional MRI and related neuroimaging applications, providing advanced analysis tools that deliver real-time feedback on key scanner performance metrics: temporal stability, drift, SFNR, ghosting, and SNR. Based on the company's advanced gel phantoms, VERIFLUX™ is purpose-built for fMRI and it is the only system available today that seamlessly integrates physical QA with the specific needs of neuroscientists and clinical researchers.

The use of QA must not be an afterthought—it must be integral to every quantitative imaging protocol. The future of MRI lies not just in pushing the boundaries of what can be imaged, but in ensuring that what is imaged is reproducible, reliable, and robust. Only then can MRI fulfil its promise as a pillar of precision medicine.

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Xavier Golay is an Honorary Professor of Magnetic Resonance Imaging at University College London and CEO of Gold Standard Phantoms. He is a leading expert in quantitative MRI, known for advancing ASL perfusion imaging and developing innovative QA solutions to support reliable, reproducible neuroimaging in clinical and research settings.

INDEPENDENT X-RAY QUALITY ASSURANCE

Streamlining X-Ray Testing And QA: A Closer Look At RTI's Cobia Meter

The ultimate ready-to-use X-ray test tool. RTI Cobia excels for routine testing in Radiography, Fluoroscopy and Dental applications.

Figure 1. RTI Cobia system for X-ray testing.

Meeting everyday QA demands with simplicity

Cobia is a family of handheld meters developed for quick and efficient testing of X-ray systems. The Cobia combines RTI's trusted detector technology & accuracy with an onboard colour display, for the most intuitive and simple X-ray test tool.

Following X-ray exposure, values are shown colour coded on the display (kV, dose, dose rate, HVL, exposure time, total filtration), and carousel through the parameters for easy recognition even at 15 ft away (such as in the control room of the X-ray environment).

The Cobia is easy to position, with full auto-ranging and no settings required, simply placed in the X-ray beam and getting an accurate reading. This simplifies training and reduces time spent on configuration, particularly beneficial in settings where QA personnel are managing a wide variety of equipment.

Figure 2. kVp measurement with RTI Cobia.

User-centric design in clinical environments

The colour display on the Cobia platform is also rotatable. In many clinical environments, where space is limited and visibility is not always ideal, this design feature allows measurement results to be read clearly, even when the meter is placed at awkward angles or upside down.

The interface supports a range of languages, including Chinese, French, German, Japanese, Norwegian, Russian, Spanish, Swedish, and Turkish. This multilingual support makes the device accessible in international clinical settings, service operations and training.

Figure 3. Rotatable colour display.

3 Models of RTI Cobia

The Cobia family comes with 3 main model types to suit the most common X-ray testing applications:

- Cobia SMART R/F
  - The smart and simple meter. Only the Cobia model, no extra probes can be connected. Choose this for routine checks of your X-ray systems.

- Cobia FLEX R/F
  - With Cobia Flex, you can connect mAs probes, CT Probes, light probes and the RTI Dose Probe. This covers a broader range of X-ray applications, including generator mAs measurement and AEC testing applications (RTI Dose Probe) in Fluoroscopy.

- Cobia DENTAL
  - This model is developed specifically for intraoral and CBCT system testing. External probes such as DAP chambers can also be connected.

Simplifying Dental X-ray QA

The Cobia DENTAL model has been developed specifically for intraoral and CBCT system testing. It is widely used in routine inspections and quality control procedures in dental clinics, often by non-specialist staff. With minimal setup and no need for manual calibration before each use, it supports quick testing workflows while still offering reliable data.

The Cobia DENTAL allows additional measurements such as Dose Area Product with the RTI DAP chamber. This broadens its applicability and allows for more detailed assessments when needed, all while maintaining ease of use.

RTI always offers more than just a meter

The RTI Cobia has been built for accuracy and simplicity. But what happens when you want to

Figure 4. Dental solution.

do more with your meter, such as perform QA testing protocols, produce reports and streamline complex tests?

The philosophy at RTI Group is to offer more, demonstrated by the fact that all Cobia models can be used with our industry leading software Ocean Next. There is no obligation to use the software with Cobia, but all models come with Bluetooth to wirelessly connect to the software, for easy backup, analysis, workflow optimisation, reporting and more.

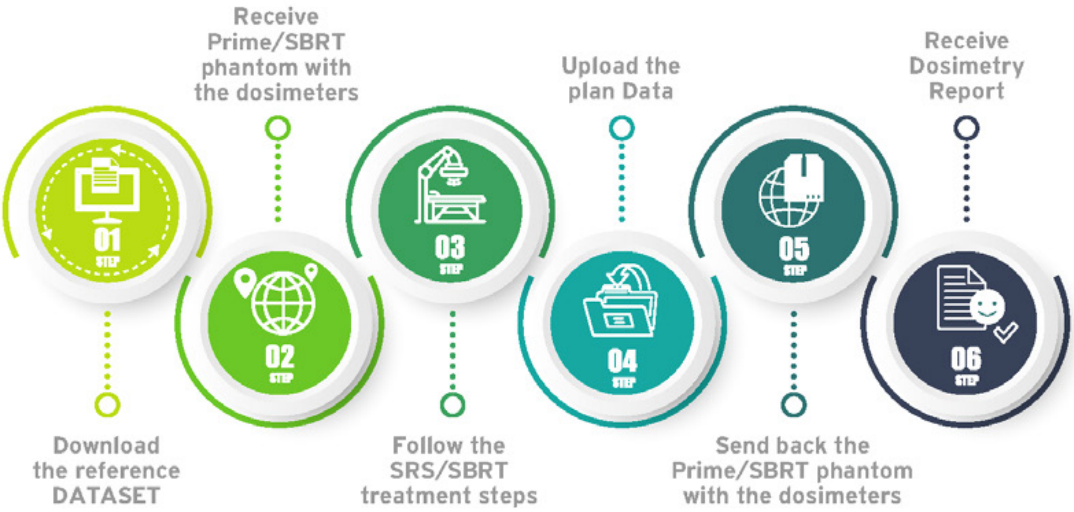
One user of Cobia comments: "Faster, easier, safer! What used to take me an hour, now takes only half that time. I have 90 % less administrative work, the client gets a protocol with all the measurements and all the data is saved automatically in a database for easy retrieval. I value speed, simplicity, and order – for me, Ocean Professional™ is worth its weight in gold".

Continued Development and Market Presence

Cobia has been widely adopted across various healthcare systems, with RTI reporting consistent performance in key global markets. To maintain its relevance in an increasingly digital QA environment, the meter receives regular updates. Most recently, its display interface was redesigned to enhance readability and usability. As is standard with RTI meters, there is a 2-year calibration cycle and up to 10-years warranty, showing Cobia's robust lifetime performance and low cost of ownership.

Michael Olding, PhD, is Head of Product Management at RTI Group. Michael works on the interface between product development at RTI and global end users of RTI's products & solutions (physicists, engineers and medical professionals), and is passionate about ensuring user needs are at the forefront of new product development at RTI Group.

succeS^{R}S: RTsafe dosimetry audit services for intracranial and body stereotactic RT applications



Promoting a culture of excellence

Intracranial Stereotactic Radiosurgery (SRS) and Stereotactic Body Radiation Therapy (SBRT) represent advanced radiotherapy (RT) techniques characterized by the precise delivery of high radiation dose to the target volumes, and therefore, their application is particularly critical to patient safety. Both SRS and SBRT techniques require well-defined and consistent methods of dose-describing, - prescribing, -modeling, -delivering, -measuring, and -reporting. This comprehensive approach ensures that these treatments are delivered accurately and safely, reducing the risk of adverse effects and optimizing treatment outcomes. Another significant benefit of having unambiguous, consistent, and harmonized procedures is the ability to share with confidence the clinical experience between centers internationally, thus promoting the "transfer of knowledge" and further empowering the scientific community.

Despite the widespread sets of recommendations on continuous and detailed quality assurance (QA) of equipment, procedures, and processes, including dosimetry, from national and international bodies, the inevitable human factor and/or the existing inadequate procedures during the radiotherapy process may lead to patient mistreatment. The interlinked dosimetry- and geometry-related treatment parameters, require a high degree of accuracy, precision, reliability, and reproducibility. This translates into the need for reduced uncertainties at each step of the complex SRS/SBRT chain, as well as, the entire RT process that contributes to the overall accuracy. External dosimetry audits are recognised as an effective method of evaluating the above, promoting the best practice, and assuring high-quality treatments. In recent years, all of these guidelines have been integrated into wider quality management systems (QMS), covering all radiotherapy stages involved.

RTsafe's variety of solutions, from remote dosimetry services to cutting-edge high-precision/accuracy phantoms for end-to-end machine and patient QA, form the new generation of QA and external dose verification in intracranial radiosurgery and SBRT. Merging the above, RTsafe has recently upgraded the succeSRS into a remote dosimetry audit service not only for intracranial SRS but also for SBRT applications. Through a mailable end-to-end quality control (QC) program, that verifies the whole treatment chain from imaging to delivery, this service aims to evaluate the dosimetric quality, planned dose accuracy, treatment complexity, and treatment deliverability of both SRS and SBRT procedures.

These audit services are conducted with the RTsafe Prime and SBRT phantoms for intracranial and body stereotactic radiotherapy applications, respectively, using specially designed inserts to accommodate optically stimulated luminescence, Gafchromic film, and polymer gel dosimeters. All the dosimeters are calibrated at the Secondary Standard Dosimetry Laboratory of the Greek Atomic Energy Commission, providing traceability to BIPM-France. Depending on the user's needs, dosimeters for audit purposes can be used either individually or as a bundle. The user receives a specific RT structure set, depending on the practice to be audited, and is challenged to achieve a specific level of accuracy for the required treatment objectives. These services enable clinicians to build maximum confidence in their treatment procedures and staff capacities, both when launching or moving to new clinical practices, as well as in their day-to-day procedures for each SRS/SBRT patient. They also serve as a powerful tool for quality improvement when included in the center's routine radiation oncology QMS.

For more information on RTsafe's remote end-to-end dosimetry auditing service contact us at info@rt-safe.com

Emmanouil Zoros is responsible for product management, data analysis, and film dosimetry at RTsafe. He has a Diploma in Applied Mathematics & Physics from the National Technical University of Athens and a Master of Science in Medical Physics from the National and Kapodistrian University of Athens. His research interests focus on radiation therapy with emphasis on quality assurance in stereotactic radiosurgery, experimental and computational dosimetry using Monte Carlo simulation techniques.

Vasiliki Margaroni is a medical physicist responsible for the data analysis and the scientific support and guidance of the end user. She has a Diploma in Physics and a Master of Science in Medical Physics from National and Kapodistrian University of Athens. She is a PhD Candidate at Medical Physics Laboratory of Medical School, National and Kapodistrian University of Athens and her research interests focus on radiation therapy with emphasis on quality assurance, experimental and computational dosimetry in contemporary radiotherapy and radiosurgery systems.

The Choice for Precision, the Standard for Quality. Introducing the MAX Elite™ Electrometer.

The MAX Elite Electrometer has the largest capacitive touch screen on the market and an intuitive user interface.

Standard Imaging unveils the MAX Elite™ Electrometer, an industry-leading innovation designed to redefine precision and efficiency in radiation therapy quality assurance. Built with the evolving needs of medical physicists and radiation therapy professionals in mind, the MAX Elite delivers unmatched accuracy, streamlined workflow, and unparalleled adaptability.

The MAX Elite is more than an electrometer, it's the foundational platform for tomorrow's advancements. Engineered with the flexibility to integrate with new technologies and support emerging therapies, it delivers unmatched accuracy and ease of use. Unlock new possibilities in QA with a tool designed to evolve alongside you.

"For more than three decades, Standard Imaging has pioneered advancements in electrometer technology, consistently setting the standard for precision and reliability," said Eric DeWerd, MBA, President of Standard Imaging. "With the MAX Elite, we've leveraged our decades of expertise to create a solution that enhances every aspect of radiation therapy quality assurance—accuracy, efficiency, and versatility. This is a tool that will empower medical professionals to meet the challenges of the future, today."

A New Standard in Dosimetry

The MAX Elite Electrometer sets a new benchmark in performance and accurate data collection. Featuring the largest capacitive touch screen on the market and an intuitive user interface, it provides the most responsive and user-friendly control available.

Quick to respond and easy to operate, the MAX Elite boasts innovative features such as rapid warmup, patent-pending fast zeroing, and fast settling capabilities, ensuring that it's always ready when you need it. These advancements not only streamline workflows but also maintain the highest level of accuracy, maximizing productivity and patient safety. With this electrometer, Standard Imaging demonstrates that the company remains committed to drive excellence and maximize productivity with high-quality, next generation solutions for radiation therapy professionals worldwide.

"I'm so excited to get this in the hands of clinical physicists," said Shannon Holmes, Ph.D., Standard Imaging Medical Physicist and Product Manager. "The response has been overwhelmingly positive whenever I get to show off the MAX Elite, and I am extremely proud of the development team that made this electrometer a reality."

Built for the Future

The MAX Elite isn't just about precision—it's about progress. The advanced calibration library enables users to scan a chamber's calibration Data Matrix Code and instantly populate key calibration details, streamlining documentation and reducing human error that comes with manual data entry.

With its adaptable design, the MAX Elite evolves alongside your practice, ensuring that as technology advances, you're always at the forefront of innovation.

Key Features of the MAX Elite Electrometer:

- Available in 2-channel, 1-channel and even 4-channel configurations for ultimate flexibility.
- Intuitive software interface that simplifies setup and operation.
- Remote operation capability, enabling convenient data collection.
- One-minute warmup time, minimizing delays and optimizing workflow.
- Wi-Fi capable for seamless integration into modern clinical environments.

*Patent Pending

About Standard Imaging

Standard Imaging remains at the forefront of the industry with cutting-edge QA solutions that guarantee precise, reliable, and safe patient care. By continuously advancing technology and setting new standards of excellence, they reinforce their commitment to equipping clinics worldwide with the essential tools for achieving optimal treatment outcomes. For more information, contact the Standard Imaging team.

Ashley Reis is the Marketing Operations Lead at Standard Imaging and has been with the company since 2020.

The Hidden Psychology of Radiation Safety: How Fear Shapes Dose Decisions in Medical Imaging

Radiation dose optimisation is a critical component of medical imaging, aiming to balance diagnostic accuracy with patient safety by minimising radiation exposure. Medical professionals, including radiologists, technologists, and referring clinicians, continually strive to adhere to the ALARA principle—keeping radiation exposure "as low as reasonably achievable." Yet, despite advancements in technology and established safety protocols, achieving this balance remains challenging, partly due to complex psychological factors that influence clinical decision-making.

Balancing diagnostic certainty with patient safety involves confronting not only technical and procedural challenges but also the hidden psychological pressures healthcare professionals face. This article explores these often-overlooked psychological dimensions—such as risk aversion, fear of diagnostic errors, and liability concerns—that shape decisions related to radiation dose. By highlighting these factors, we aim to encourage integration of psychological awareness into training programmes and organisational policies to foster more informed, confident, and safer imaging practices.

Psychological Drivers Behind Dose Decisions

Healthcare providers frequently encounter psychological influences that subtly guide their radiation dose decisions. One prominent factor is risk aversion, particularly the fear of uncertainty or missing a critical diagnosis. Radiologists and other medical professionals may unconsciously favour higher radiation doses to enhance diagnostic confidence, often selecting advanced imaging modalities over lower-dose alternatives. Cognitive biases such as availability bias—where recent rare cases significantly influence decision-making—further reinforce this cautious, dose-intensive approach [1].

A closely related driver is the fear of diagnostic errors. Medical professionals often worry that lower radiation doses might compromise image quality, potentially leading to missed findings. This anxiety, especially prominent among radiologists, is well-documented. A recent analysis underscores that radiologists—deeply aware of the consequences of diagnostic errors—often lean towards higher radiation doses or follow-up studies to ensure accuracy [2].

Another major influence is liability concern, which fuels a culture of defensive medicine. Clinicians may order unnecessary imaging tests to protect themselves against potential litigation. This medico-legal fear leads to over-imaging and elevated radiation exposure. Expert discussions confirm that legal concerns often override adherence to evidence-based best practices [2]. Referring clinicians are particularly susceptible, as legal fears and patient expectations contribute to excessive imaging orders [4].

By openly acknowledging and addressing these psychological drivers—fear of errors, legal repercussions, and ingrained cognitive biases—medical imaging departments can better manage radiation safety, ensuring decisions align more closely with evidence-based best practices and patient well-being.

Radiologists' Dilemma: Quality vs Risk

Radiologists face a unique challenge in balancing image quality with patient safety due to their direct role in interpreting imaging studies. Unlike other healthcare providers, their diagnostic interpretations carry immediate clinical and legal weight, often heightening anxiety over uncertainty.

To mitigate this, radiologists benefit from specialised training in uncertainty management and structured peer-review programmes that validate image adequacy even at lower doses. Role-specific strategies, such as confidence-building through decision-making simulations, and active engagement with dose optimisation guidelines, can help reinforce that lower-dose imaging can still yield high diagnostic value.

Organisational support is also key. A strong safety culture that encourages second opinions, shared decision-making, and transparent error reporting can empower radiologists to resist fear-driven choices and uphold ALARA principles without compromising diagnostic confidence.

Technologists on the Frontline: Adherence vs Autonomy

Radiologic technologists, who implement imaging protocols directly, face their own set of psychological pressures. A key factor is the fear of producing suboptimal image quality, which could lead to repeated exams, criticism, or compromised patient outcomes. Technologists often default to familiar, higher-dose protocols rather than risk subpar results from dose-reduced methods [3].

Studies reveal significant knowledge gaps in advanced dose management strategies, such as diagnostic reference levels. While many technologists recognise the ALARA principle, fewer understand or apply quantitative dose metrics in daily practice. This gap highlights the need for targeted education to enhance technologists' confidence in optimising dose [1].

Building a supportive organisational culture that values technologists' input, promotes communication with radiologists, and offers continuous education can alleviate these pressures, helping them confidently apply optimisation techniques without sacrificing diagnostic quality.

Referring Clinicians: The Fear Factor in Over-Imaging

Referring clinicians play a pivotal role in determining whether imaging is ordered in the first place. Unlike radiologists or technologists, they often lack detailed training in imaging appropriateness or radiation dose considerations. This knowledge gap, combined with medico-legal fears and pressure from patients or families, makes them particularly vulnerable to over-imaging due to uncertainty.

Addressing this requires focused education on evidence-based imaging guidelines, including campaigns such as Choosing Wisely and the ACR Appropriateness Criteria. Integrating clinical decision support systems (CDSS) into electronic ordering platforms can provide real-time feedback on imaging choices and reduce unnecessary referrals.

Additionally, risk communication training can equip referring clinicians to manage patient expectations more effectively, shifting conversations from "more testing equals better care" to informed, safety-first dialogue.

Towards a Culture of Confidence and Clarity

Addressing psychological barriers to radiation dose optimisation requires cultivating confidence and clarity in decision-making. Training should include psychological awareness, helping professionals manage anxiety around uncertainty and liability.

As emphasised by the WHO and IAEA, developing a robust radiation safety culture involves not just policies but the emotional empowerment of staff through education, collaboration, and supportive leadership [5].

Decision-making simulations, peer feedback sessions, and role-playing are useful for helping radiologists and technologists gain confidence in using lower-dose protocols. Similarly, risk communication workshops can empower referring clinicians to make decisions less driven by fear.

Initiatives such as the Image Gently and Image Wisely campaigns demonstrate effective ways to institutionalise such approaches, blending psychological insight with practical tools for safer imaging.

Reframing Radiation Safety

Integrating psychological insight into radiation safety represents an untapped opportunity to improve imaging practices. Recognising and addressing fear-based decision-making—whether related to diagnostic confidence, legal exposure, or cognitive biases—can lead to more rational, evidence-based choices.

Leadership in imaging departments and healthcare institutions must support training and policies that promote psychological resilience. A culture that emphasises transparency, team collaboration, and continuous education will allow imaging professionals to act confidently in the best interest of patient care.

Reframing radiation safety through a psychologically informed lens provides a clearer path towards optimised, patient-centred imaging—where low-dose decisions are not feared, but trusted.

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Ana Dolcet Llerena, a Spanish medical physicist, works as Senior Application Specialist at Qaelum NV, focusing on patient dose management across Iberia, LATAM, and beyond. She trained in Granada and began her career in a radiation protection unit. She is an active member of the Spanish Society of Medical Physics.

The Timeless Cube

50 Years of Trust, Innovation, and Quality—

The Journey to myQA Blue Phantom.

Figure 1. myQA Blue Phantom3

50 years ago, Wellhöfer Kernphysik began its journey in a modest residential house in Fürth. From these humble beginnings, founders Roswitha and Manfred Wellhöfer, along with their dedicated team, embarked on a mission to revolutionize radiation measurement technology.

Manfred Wellhöfer's groundbreaking water phantom designs, featuring advanced mechanics, set new standards in the field. The development of fast electrometers and advanced dose recorders showcased Wellhöfer's commitment to solving complex measurement challenges.

The strategic move to Schwarzenbruck and the launch of the modular WP600 controllers marked a pivotal moment. These state-of-the-art systems propelled Wellhöfer to international acclaim. In the ‘70’s, the WP600 series became the gold standard in radiation measurement, synonymous with quality and innovation.

Since that pivotal moment, in direct response to the rapid advancements in technology and the continuously evolving landscape of the linac market, IBA Dosimetry has successfully launched multiple water phantoms designed specifically to meet the diverse needs of customers around the globe. Our extensive product lineup features several innovative models, including Blue Phantom, Blue Phantom^{2}, Blue Phantom Compact, Blue Phantom Helix, and SMARTSCAN. Each of these products has been carefully developed to provide precise and reliable performance in the field of radiation therapy. Through our dedication to quality and innovation, we have made "Blue Phantom" a name that is widely recognised and trusted within the specialties of medical physics and radiation therapy quality assurance.

myQA Blue Phantom3 - A Shape of Strength, Stability, and Innovation

With a rich history spanning over 50 years of expertise in the field, we are thrilled to introduce myQA Blue Phantom^{3} (cube), which represents the next generation of water phantoms designed specifically to revolutionize the radiation therapy landscape. Blue Phantom^{3} provides the highest standards in measurement accuracy and reliability with unmatched speed, precision, and flexibility. By integrating advanced technology and innovative design, myQA Blue Phantom3 brings a new level of excellence to every radiation therapy department.

Speed

Time is of the essence in radiation therapy, especially during linac commissioning or yearly QA, and our new water phantom delivers rapid results without compromising accuracy. With mechanical auto-leveling in under 30 seconds, setup is swift and hassle-free. The Wi-Fi electrometer ensures seamless data transmission and remote monitoring capabilities, while the single hand pendant offers intuitive control, making the entire process smooth and efficient.

Precision

Accuracy is paramount in radiation therapy. MyQA Blue Phantom3 is equipped with a reference class electrometer that guarantees high precision in all water phantom measurements. The integration of advanced magneto restrictive sensors enhances measurement reliability, ensuring that every reading is accurate to within 0.1 mm.

Flexibility

myQA Blue Phantom^{3} offers automatic levelling on both lift tables and treatment couches, providing you with the flexibility to use it in various settings without any additional accessories, making it a versatile choice for different equipment. It is suitable for C-arm, O-shape, and robotic linear accelerators, ensuring compatibility with a wide range of devices. The measurement setup of choice allows for customization to meet different specific needs, making this water phantom a truly versatile tool.

Blue phantom^{3} stands out as a leader in the field, offering unmatched speed, precision, and flexibility. It is designed to meet the rigorous demands of modern medical practices, supporting clinical users in delivering the highest quality care.

Figure 2. myQA Blue Phantom^{3}

Sandra Kos, MSc., is a Senior Product Manager at IBA Dosimetry. With a strong foundation in clinical practice, she began her career as a physicist in the radiation therapy department. Leveraging years of hands-on expertise, she transitioned into the radiation therapy industry, where she now collaborates with users and clinics globally to deliver innovative solutions In her current role she defines product roadmaps, supports go-to-market strategies, and ensures that customer feedback drives continuous product improvement and innovation.

Matthew O'Neil is a Product Manager at IBA Dosimetry whose main focus is in imaging quality assurance. Matthew came to IBA Dosimetry in 2021 with over 5 years of experience performing quality assurance in external radiation therapy and diagnostic medical imaging where his primary expertise was carrying out Patient QA in Proton Therapy and Linear accelerator commissioning.

CrossYGN Initiative – Podcasts, Workshops and much more

The cross-sectional collaboration between the young sections of EFOMP (European Federation of Organisations for Medical Physics), IRPA (International Radiation Protection Association), FuseNet (The European Fusion Education Network), and ENS (European Nuclear Society), as part of the ENEN2plus Work Package WP3 – Task 3.4, had a productive and promising first half of the year, continuing to foster new opportunities and events.

One of the highlights was the launch of a new podcast series, Powered by Passion, initiated by the Young Generation Networks (YGNs). The series features young professionals from across the nuclear sector, aiming to highlight the wide range of career paths available, as well as the vital contributions of passionate, motivated early-career individuals working in diverse areas of the field.

To date, five episodes have been recorded, including two featuring representatives from EFOMP's Early Career Group.

- Episode 2 - A Key To Safe Medical Care - Nefeli Tzoumi (EFOMP)
- Episode 4 - Saving Lives with Proton Beams - Jesús Garcia Ovejero (EFOMP)

The podcast series is online on YouTube and Spotify, and has been promoted on social media channels and newsletters.

As for in-person engagements, on the occasion of the European Nuclear Young Generation Forum – ENYGF2025, the Cross-YGN initiative has proposed a thematic workshop designed to engage the Forum's large and diverse audience. The event will take place in Zagreb from 2nd to 6th June 2025, with the workshop scheduled for 3rd June under the title: "**AI in Action: Powering Innovation Across Nuclear Fields.**"

This session aims to showcase the cross-disciplinary nature of innovation within the nuclear sector, focusing particularly on the transformative role of artificial intelligence across various fields. The confirmed speakers are:

- **Gabriel Pavel (ENEN)** – Educating for AI: Potential and Challenges in AI Education Across Europe
- **Alessio Iuvara (ENS-YGN)** – AI Applications in Licensing
- **Ivan Pribanić (EFOMP)** – AI in the Medical Field: Applications in Diagnostics, SPECT, and Imaging
- **Fabian Paischer (FuseNet)** – AI in Fusion: Neural Surrogates for Nonlinear Gyrokinetic Simulations

Bologna Poster Competition and Summer Camp

The *ENEN2Plus 4th Secondary School Competition & Summer Camp* will take place in Bologna, Italy, from 14th to 18th July 2025, offering an exciting opportunity to engage with secondary school pupils from across Europe. As part of the competition, students have submitted over 130 creative and informative three-minute videos explaining various nuclear applications.

The Cross-YGN initiative is planning a dedicated

Figure. Presenters of the podcast

workshop aimed at capturing pupils' interests and enthusiasm. This event will follow a visit to the ENEA Brasimone Research Centre laboratories—an inspiring setting that will allow students and speakers to engage in dynamic, hands-on discussions.

The technical tour will provide attendees with a unique opportunity to explore the Centre's multidisciplinary research and innovation activities. These include work on magnetic confinement nuclear fusion technologies, heavy liquid metal fission systems (Generation-IV LFR), the development and qualification of advanced materials, environmental radiometry, radioisotope production, and the innovative application of ionising radiation in cancer diagnostics and radiotherapy.

Mattia Baldoni is the Communications Officer at the European Nuclear Society (ENS), which promotes nuclear science, technology, and peaceful applications. Based in Brussels, ENS unites over 12,000 professionals across academia, research, industry, and regulatory bodies. A long-standing ENEN partner, ENS leads Task 3.4 of the ENEN2Plus project, focused on cross-YGN and cross-professional networking.

4th EUROPEAN NUCLEAR COMPETITION FOR SECONDARY SCHOOLS

Bologna, Italy – 14-18 July 2025

Participants

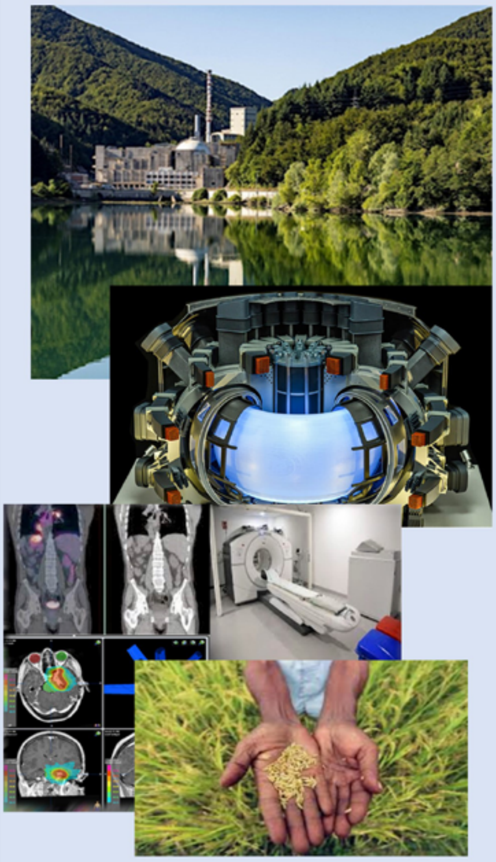
Pupils enrolled in secondary schools in European States. Each Team consists of **two pupils and one teacher.**

How to participate

Form a team of with a classmate and a teacher. Create a 3 minutes video (maximum 4 minutes) introducing a specific nuclear application (e.g. energy, radiation protection, medicine, radioactive waste, etc.).

Awards

Significant monetary awards will be granted at the competition.
In-person participation in the nuclear science camp for 15 finalist teams of the video competition.



REGISTRATION

Registration and video upload via website:

https://secondaryschoolcomp2025.enen.bme.hu/registration/

Video submission deadline: 31 March 2025

Nomination of 15 finalist teams: 15 April 2025

Contact
nuclear.competition@enea.it

Funded by the European Union

ESMPE European School for Medical Physics Experts: Proton Therapy Physics

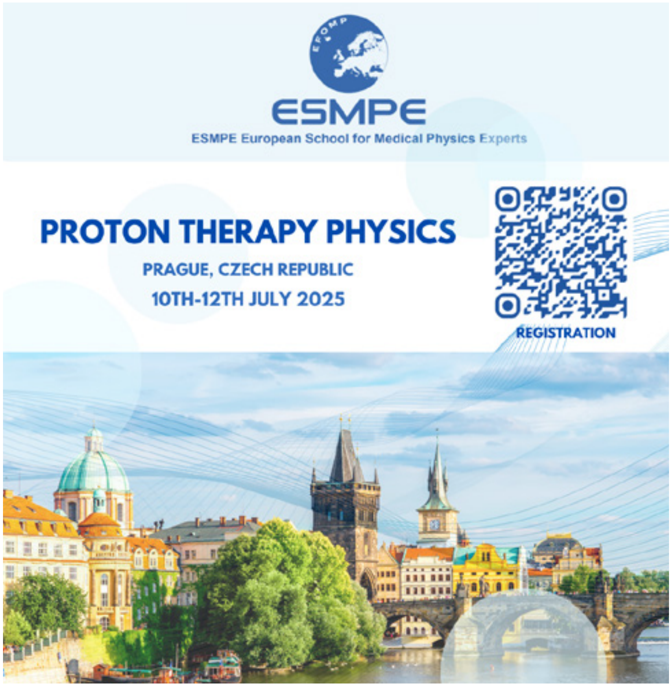


Figure: ESMPE Proton Therapy School.

EFOMP in collaboration with the Particle Therapy SIG and the Czech Association of Medical Physics (CAMP) presents an advanced two-and-half day course on proton therapy. The school will be aimed at introducing the basic concepts of proton therapy, dosimetry and treatment planning. The school will cover the methods of basic proton physics including acceptance of new proton therapy machine, proton dosimetry, proton treatment planning, in-room and out-of-room imaging ideally customized for proton therapy, and novel technologies such as FLASH and spatial fractionated radiotherapy (SFRT). On Saturday morning, there will be hands-on practical experience at the Proton Therapy Center Czech Ltd, located in Prague. The course promises to offer a comprehensive understanding of proton therapy, including practical experience at the Prague Proton Therapy Center.

Topics to be addressed at the Proton Course Include

1. **Setting Up a Proton Facility and Radiation Protection requirements:**

   This session will guide participants through the complex planning and design process involved in establishing a proton therapy center. Topics will include:
   - Facility layout and shielding design
   - Regulatory considerations and licensing
   - Radiation protection protocols for staff, patients, and the public
   - Quality assurance in facility infrastructure and environmental monitoring

2. **Clinical commissioning of a proton therapy center:**

   Focused on bringing a new proton therapy facility online, this session will cover:
   - Acceptance testing of the proton therapy system
   - Beam characterization and calibration
   - Integration of imaging systems and treatment delivery hardware
   - End-to-end testing and validation for clinical readiness

3. **Commissioning of a treatment planning system for proton dose calculations:**

This session will guide participants through commissioning a treatment planning system (TPS) for proton therapy. Topics will include:
- Understand the specific challenges of proton dose calculation vs. photons.
- Learn how to acquire, validate, and input beam data into the TPS.
- Evaluate the accuracy of algorithms (e.g., pencil beam, Monte Carlo).
- Verify CT-to-stopping power conversion curves using clinical and phantom data.
- Develop robust workflows for plan quality assurance

4. Introduction to key radiation biology concepts required in proton therapy:

Understanding biological responses is essential for optimizing proton therapy. This module will review:
- Linear energy transfer (LET) and relative biological effectiveness (RBE)
- DNA damage mechanisms specific to protons
- Biological considerations in hypoxic tumors
- Translational research in radiobiology for proton therapy optimization

5. Overview of Single and Dual Energy CT for proton therapy:

Imaging accuracy is critical for proton range estimation. This session will explore:
- Principles of single vs. dual energy CT (DECT)
- Clinical workflow for CT-based stopping power estimation
- Challenges and artifacts affecting CT images
- Advances in DECT calibration methods for improved proton dose planning

6. Overview of adaptive proton radiotherapy approaches used daily in proton centers:

This session focuses on daily adaptation strategies for patient setup and anatomy changes:
- In-room image guidance techniques (e.g., cone-beam CT, orthogonal X-rays)
- Anatomical variation tracking and dose recalculation
- Implementation of adaptive workflows in busy clinical settings
- Clinical case studies showcasing adaptive decision-making

7. Overview of novel therapy technologies such as FLASH and SFRT:

Emerging high-dose-rate and spatial dose delivery techniques hold promise for reducing toxicity and enhancing tumor control. This forward-looking session will introduce:
- Biological rationale and current research in FLASH radiotherapy
- Principles and clinical potential of SFRT using proton beams
- Technical challenges and early clinical trial data
- Integration pathways into future proton therapy workflows
- Clinical commissioning of a proton therapy center for the treatment of cancer using protons:

Each topic will be delivered by experts in the field and include practical insights, case studies, and opportunities for Q&A. The course aims to empower participants with both the theoretical knowledge and applied skills necessary to advance proton therapy in clinical and research environments.

Accreditation and Expert Faculty

This ESMPE course is accredited by the European Board of Accreditation for Medical Physics (EBAMP) as a Continuing Professional Development (CPD) event for Medical Physicists at EQF Level 8. The event will feature lectures and demonstrations by renowned experts in the field: Join us in Prague from the 10th -12th of July! Registration is via the EFOMP website.

João Seco, Professor at the DKFZ Heidelberg, is Chair of the European School for Medical Physics Experts and Vice Convenor of EFOMP's Particle Therapy SIG. With a PhD from ICR London, he previously taught at Harvard and now leads ion beam research focusing on imaging and radiation-induced DNA damage mechanisms.

Special Interest Group for Radionuclide Internal Dosimetry (SIG_FRID)

The objective of the SIG_FRID is to establish a network of medical physicists working in radionuclide dosimetry. The SIG_FRID aims to meet the need for networking, education, research and professional exchanges in this field.

The current membership of SIG_FRID stands at 256. We always welcome new applications (please see below for details on how to become a SIG member).

Steering Committee

The composition of the Steering Committee as of March 2024 is:
- Manuel Bardiès (Chair)
- Julia Brosch-Lenz
- Carlo Chiesa
- Gerhard Glatting
- Silvano Gnesin
- Pablo Mínguez Gabiña (Vice-Chair)
- Steffie Peters
- Katarina Sjögreen Gleisner (Secretary)
- Lidia Strigari

The priorities of the SIG_FRID Steering Committee are:
- Priority 1. Scientific meetings.
- Priority 2. Focus group management and follow-up.
- Priority 3. Teaching/Education/Dissemination.
- Priority 4. Communication.
- Priority 5. Professional/Regulatory/Economic matters.

A summary of the most recent activities performed in these priorities is provided below.

Priority 1. Scientific meetings & Case reports.

All scientific meetings and case reports are available in the Webinar Repository of EFOMP's new e-learning platform,

The most recent Dosimetry Case Report Meeting took place on **15 April**, covering the topic "*Dosimetry protocols with restricted image acquisition requirements.*"

The next Scientific Meeting will be held on **17 June**, focusing on the topic "*Dosimetry Software*." Speakers and detailed topics will be announced shortly – stay tuned!

Below is the schedule of upcoming **Scientific Meetings** and **Dosimetry Case Report Meetings** organised by the SIG_FRID group for 2025. While topics and speakers will be announced in due course, registration is already open via the EFOMP website.

▸ **Scientific Meetings**
- Tuesday, **17 June**, 15:00–17:00 CEST
- Tuesday, **21 October**, 15:00–17:00 CEST

▸ **Dosimetry Case Report Meetings**
- Tuesday, **12 August**, 12:00–13:00 CEST
- Tuesday, **2 December**, 12:00–13:00 CET

We look forward to welcoming many of you at these sessions.
Save the dates in your calendar!

Priority 2. Focus Group (FG) management and follow-up.

The updated FGs and their leaders are as follows:

- FG2 Treatment Planning Systems (Lidia Strigari)
- FG3 Absorbed dose-effect relationship (Lidia Strigari)
- FG4 Voxel S-Values (Julia Brosch-Lenz)
- FG5 DICOM Standard (Manuel Bardiès)
- FG6 Accuracy of therapeutic activities for nuclear medicine applications (Silvano Gnesin)
- FG7 MRT dosimetry education (Katarina Sjögreen-Gleisner)
- FG8 Simplified dosimetry (Sasha Ivashchenko and Deni Hardiansyah)

Priority 3. Teaching/Education/Dissemination.

A total of **24 pre-recorded webinars** on the Basics of Clinical Nuclear Medicine Dosimetry have been released on EFOMP's e-learning platform for IAMs.

The full webinar series is also available on YouTube: Watch the playlist

This series served as a prerequisite for the in-person **ESMPE School** course on The Practical Uses of Clinical Dosimetry, held in **Prague from 13–15 February 2025**.

The school was a great success, attracting **113 participants** (58 attending in person and 55 virtually). A heartfelt thank you to the local organisers, **Tereza Hanušová** and **Jaroslav Ptáček**, for their outstanding efforts!

Priority 4. Communication.
All SIG_FRID members are encouraged to share and disseminate relevant information directly via the SIG_FRID email list or through Slack. This may include relevant publications, PhD opportunities, job vacancies, grant calls, and similar announcements.

EU Updates
COST Action – RATIONALE (Radionuclide Theragnostics for Personalised Medicine)

The RATIONALE COST Action (CA22118) is currently open to new members. This initiative offers an excellent opportunity to connect with colleagues working in theragnostic imaging and dosimetry. It also supports short-term scientific missions and student exchanges. In addition, RATIONALE organises dedicated training Schools (see below).
More information

European Partnership for Personalised Medicine
New Fast Track and Venture Creator programmes have been launched under the European Partnership for Personalised Medicine (EP PerMed), offering further opportunities for innovation and collaboration.
Read more

Priority 5. Professional/Regulatory/ Economic matters.

The **SimpleRad project** (https://earl.eanm.org/simplerad/) has concluded following the European Commission's acceptance of the final report.

The **public consultation** by the EMA concerning the introduction of internal dosimetry closed on **31 January 2025**. The SIG_FRID Steering Committee prepared a comprehensive response document, which was approved by the EFOMP Board and subsequently submitted. This marks a significant milestone, as it is the first time the EMA has formally addressed the optimisation of nuclear medicine therapy.

In parallel, at the request of Marta Cremonesi, Carlo Chiesa drafted a separate document endorsed by **103 SIG_FRID members** in their individual capacities.

Additionally, Carlo Chiesa and Lidia Strigari have developed a survey aimed at clarifying the feasibility of administering **^{177}Lu-DOTATATE** more than four times—not as re-treatment. This practice is currently permitted in certain EU countries.

The survey will be directed at individuals with specialised expertise in regulatory matters.
Incoming meetings:

- 38th EANM Annual Congress
  4–8 October 2025, Barcelona, Spain
  🌐 https://eanm25.eanm.org/

- Second Symposium on Molecular Radiotherapy Dosimetry
  13–15 November 2025, Athens, Greece
  🌐 https://smrd2025.efomp.org/
  Registration is now open! Abstract submissions are invited and the deadline is 31 July 2025.

How to Become a SIG_FRID Member
SIG_FRID is open to professionals interested in radionuclide dosimetry. Membership is available to all EFOMP members. Instructions for joining can be found on the SIG_FRID page of the EFOMP website: SIG_FRID Membership.

Pablo Mínguez Gabiña (PhD Lund University) is a senior medical physicist at the Gurutzeta/Cruces University Hospital in Barakaldo, Spain and a part-time professor at the faculty of engineering of the University of the Basque Country in Bilbao. He is the Vice-Chair of the Steering Committee of SIG_FRID.

Innovation in CBCT Dosimetry: A Conversation with Samantha J. Feller and Kathleen Trombalski

Interview conducted by Prof. Markus Buchgeister

Dear Samantha, could you tell us about your background and what led you to your degree. Any specific motivation?

(**SF**): From an early age, I was fascinated by both medicine—especially oncology, influenced by my grandfather—and physics. I trained as a medical technologist in radiology (MTR) at Lette-Verein, Berlin, and worked in radiotherapy at Helios Klinikum Berlin-Buch. Over time, I developed a desire to deepen my knowledge, especially after meaningful patient interactions. One patient, particularly curious about linear accelerators, jokingly suggested I become a nuclear physicist—which sparked the decision to pursue a degree in Physical Engineering / Medical Physics at the Berlin University of Applied Sciences (BHT).

Kathleen, why did you propose this thesis topic and what appealed to you about supervising it?

(**KT**): The idea stemmed from a talk by Ms Orovwighose at the DGMP Academy in 2021. I was intrigued by using the Octavius 4D phantom for CTDI measurements. Working with BHT gives us access to motivated students like Ms Feller, who bring fresh energy to practical research. Supervising such projects aligns with my goal of continuous process improvement and sharing clinical expertise.

Samantha, what was the aim of your thesis? Was there any prior work?

(**SF**): The aim was to simplify CBCT dosimetry on linear accelerators using the Octavius 4D phantom. Current methods require multiple scans, which strain the kV tube. My work built on a previous thesis that showed the phantom's detector array could detect kV radiation but needed further calibration. We refined this using kV-specific depth dose curves (PDDs) in water, enabling more accurate CTDI measurements.

And what challenges did you face and how did you overcome them?

(**SF**): Capturing the PDDs with the linear accelerator's kV tube was technically complex. The water phantom had to be positioned manually on the patient couch, which required creative problem-solving and safety measures. Due to cooling limits, the measurements were spread over several days.

How was the collaboration during the project?

(**SF**): The project involved a mix of solo and team work. PDD measurements required hands-on collaboration on weekends, while I independently carried out most data analysis and software implementation. I appreciated the support from Ms Trombalski and the entire team.

(**KF**): Ms Feller worked with exceptional organisation and professionalism. The data quality and visualisation were outstanding, requiring only minimal revision.

Were the expected results achieved? Any future steps?

(**SF**): Yes, most protocols yielded results within a 30% tolerance. Two low-dose protocols initially unanalysable were made evaluable by increasing the mAs. The method is now implemented clinically at Helios, and we'll monitor its long-term performance.

How do you reflect on this experience?

(**SF**): It was extremely rewarding. The thesis confirmed I'd chosen the right academic path, and the final method offers added value by providing a full phantom dose distribution. The project exceeded my expectations.

Any advice for future students?

(**KT**): Choose a topic that genuinely interests you—it makes a huge difference. Also, involve everyone respectfully, regardless of experience or background. Innovation often comes from unconventional thinking, so be open to new approaches and perspectives.

Samantha J. Feller trained as a Medical Technical Radiographer (MTR) in Berlin (2007–2010). She worked in radiotherapy at Helios Klinikum Berlin-Buch (2010–2021) and earned a Bachelor's in Physical Engineering/Medical Physics (2021–2024). Since 2024, she has been pursuing a Master's in the same field at Berlin University of Applied Sciences.

Kathleen Trombalski has been a passionate medical physicist for 17 years. She works as a clinical medical physics expert (MPE) at the Helios Klinikum Berlin-Buch specialising in external radiotherapy and brachytherapy. She has been involved in teaching and mentoring undergraduate and graduate students for many years.

Markus Buchgeister, began his medical physic career in radiation therapy at Tübingen University Clinic in 1995. In 2010, he became Professor of Medical Radiation Physics at Berliner Hochschule für Technik. Since 2003, he has served as a DGMP board member for public relations and communications and held roles within EFOMP, including Communication and Publications Chair (2003–2009), German EFOMP Delegate (2009–2015, current), and Education and Training Chair (2017–2018).

winner of the Young Author Award

Proof-of-Concept Study on Host-Gut Microbiome Functional Resilience to Radiation

This article is a summary of a Master's degree final project thesis

Introduction

The gut microbiome is involved in functions important for human health, including bile acid metabolism, energy metabolism and immunity. When these functions become disrupted, there are major health implications for the host. The gut microbiome is disrupted from ionising radiation exposure [1], with changes in the gut microbiome implicated in cancer therapy effectiveness [2], and side-effects [3][4]. Astronauts are also exposed to radiation, with gut microbiome changes linked to metabolic disruption during spaceflight [5]. The underlying cause of these health effects is poorly understood. The effect radiation has on specific gut microbiome species has yet to be explored in depth, with most research only investigating poorly resolved bacterial taxa. As radiotherapy patients and astronauts experience health challenges due to their ionising radiation exposure, exploring the effect radiation has on specific gut microbiome species has potential to improve treatment outcomes for patients, and maintain astronaut health during spaceflight.

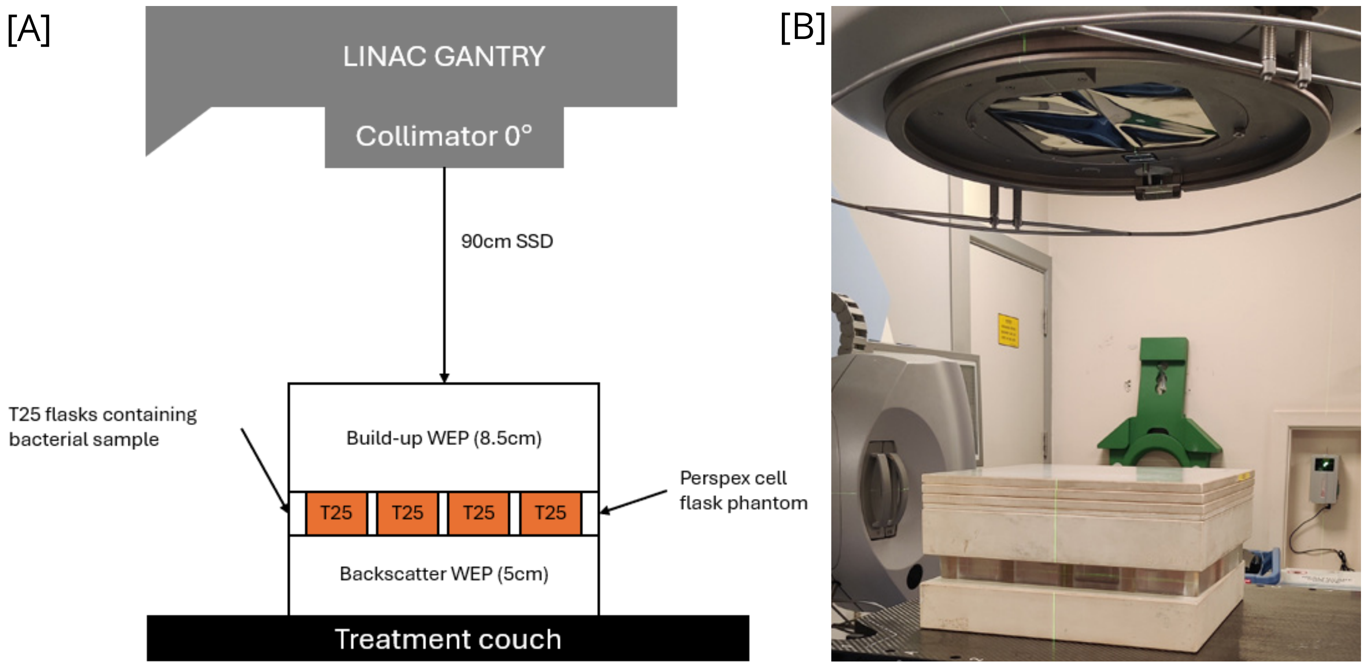


Figure 1. Irradiating bacterial samples: (A) Schematic of bacterial sample set-up on LINAC for irradiation, (B) photo of bacterial irradiation set-up.

Method

The aim of this research project was to develop a tractable culture and irradiation system to irradiate gut bacteria species, and to use this method to investigate the radiosensitivity of an exemplar gut bacterial species, *Lactobacillus acidophilus*. Bacterial samples were exposed to radiation doses of 10 Gy, 20 Gy and 50 Gy using a 6 MV photon beam on an Elekta Synergy LINAC. Growth of irradiated bacterial samples was subsequently characterised over a period of 15 hours using a spectrophotometer. As a comparison, another species of bacteria, *Escherichia coli*, was exposed to radiation to compare its growth response to L. *acidophilus*.

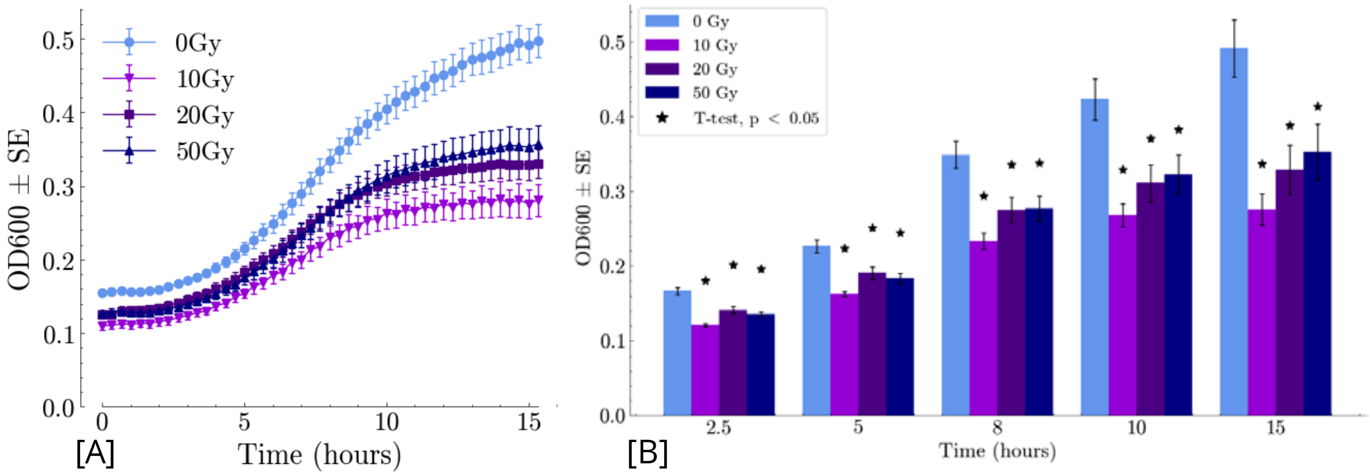


Figure 2. (A) Growth curve of L. acidophilus. (B) Bacterial population along the growth curve (t-test, p < 0.05). Error bars represent standard error for three biological replicates.

Results

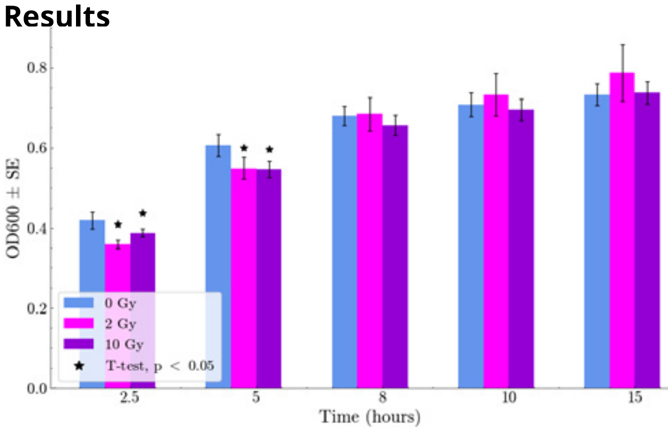


Figure 3. Bacterial population of E. coli along the growth curve for 2 Gy and 10 Gy (t-test, p < 0.05). Error bars represent standard error for three biological replicates.

The growth of L. *acidophilus* was compromised after exposure to all doses used in this work, as seen in Figure 2A.

Bacterial growth rate was reduced, and statistically significant decreases (t-test, $p<0.05$) in the bacterial population (OD600) were observed in treated samples versus untreated samples at different time points along bacterial growth shown in Figure 2B.

The growth of *E. coli* was found to be more resilient to radiation compared to L. *acidophilus*, with statistically significant decreases in bacterial population only observed in the first 5 hours of growth (see Figure 3).

Conclusion

As bacterial growth is compromised by radiation, important functions performed by L. acidophilus may be compromised, providing insight into the functional radiosensitivity of the gut microbiome. Radiation exposure will likely compromise growth of this bacterial population, potentially contributing to toxicities in patients and pathology in astronauts. It was also found that there is a differential response to radiation between bacterial taxa, which highlights the importance of characterising the radiosensitivity of the gut microbiome by investigating specific species of bacteria.

The methodology developed in this master's thesis will facilitate investigations into how the functional radiosensitivity of the gut microbiome contributes to radiotherapy and spaceflight pathology, with potential to improve treatment and recovery for radiotherapy patients and help maintain astronaut health during long-duration spaceflight in the future.

References

[1] Fernandes, A. Oliveira, R. Soares, and P. Barata, "The effects of ionizing radiation on Gut Microbiota, a systematic review," Nutrients, vol. 13, no. 9, p. 3025, Aug. 2021. doi:10.3390/nu13093025

[2] N. Iida et al., "Commensal bacteria control cancer response to therapy by modulating the tumor microenvironment," Science, vol. 342, no. 6161, pp. 967–970, Nov. 2013. doi:10.1126/science.1240527

[3] A. Mitra et al., "Microbial diversity and composition is associated with patient-reported toxicity during chemoradiation therapy for cervical cancer," International Journal of Radiation Oncology-Biology-Physics, vol. 107, no. 1, pp. 163–171, May 2020. doi:10.1016/j.ijrobp.2019.12.040

[4] J. Liu, C. Liu, and J. Yue, "Radiotherapy and the gut microbiome: Facts and fiction," Radiation Oncology, vol. 16, no. 1, Jan. 2021. doi:10.1186/s13014-020-01735-9

[5].E. Gonzalez et al., "Spaceflight alters host-gut microbiota interactions," Npj Biofilms and Microbiomes, vol. 10, no. 1, Aug. 2024, doi:10.1038/s41522-024-00545-1.

Michaela Walsh is a graduate of the MSc programme in Medical Physics in University College Dublin (UCD). She is now a PhD researcher in UCD working in collaboration with St. Luke's Radiation Oncology Network, Ireland, continuing the work she began in her master's thesis.

The Artificial Intelligence "BOOM" … So What?

I aim to answer the 'so what' question by navigating through the ethical and political challenges of AI. From aiding in QA and diagnostics to radiotherapy planning, AI can do so much in medical physics. But can AI rightfully answer all the penetrating questions?

AI is featured in questions regarding patient safety, ethics and political regulation. Governmentality becomes crucial – AI governance isn't just about regulations but about how power is exercised through technologies.

Who's in Control?

AI can promote best practices and is able to predict patient outcomes through analysis of radiographic images and optimise doses. But when e.g., images are diagnosed as false positive or false negative, who is responsible?

There's the issue of bias that leads to possible problems with equality and justice. AI models learn from historical data, and if that data carries bias, AI can perpetuate inequalities. For example, AI trained on datasets that underrepresent certain demographics might lead to inaccurate diagnoses for those populations.

The social psychologist, Zuboff, warns against commodification of data, mentioning how AI can turn human experience into a tool for commercial gain. In medical physics, this is about patient data – who controls it, and how it might be used beyond its intended clinical purpose. We must not reduce patients to algorithms, where people are no longer individuals but individuals or reduced to readable data profiles.

The World of Regulations

The AI Act is setting the stage for a regulatory framework, but how will it affect medical physics? Just as the brain accumulates and manipulates knowledge, AI can do the same with the data it is fed, and patient data is not exempt. Overregulation and restrictions could slow down advancements, while lack of oversight could lead to misuse.

Funding is another political hurdle. Using AI requires investment, and not all hospitals have the resources to integrate AI models. Patients should not be victims of outdated technology.

AI's role in healthcare was highlighted during the Youth Policy Dialogue on World Cancer Day 2025, where EU Commissioner Olivér Várhelyi, discussed AI in improving cancer care. Youth cancer survivors advocated for the **right to be forgotten**, emphasising their right to continue living without being marked by their medical history. Similarly, users of AI must safeguard their autonomy. Everything is just a click away and thus, the right to be forgotten extends beyond medical records – it is about reclaiming control.

Another concern is **dependency on AI**. Excessive reliance could weaken critical thinking, decision-making skills and potential vulnerabilities in patient care if AI systems fail.

In the EFOMP-organised event: Leading Medical Physics to a Sustainable Future, in March 2025, some speakers mentioned that having **centralised patient data** is the ultimate dream. But I disagree. True, centralising medical records could lead to improved diagnostic and treatment strategies but this

Figure. Participants of the Youth Policy Dialogue.

raises a fundamental question… who owns this data? In some cases, patients have little control over how their data is shared or used, increasing the risk of data breaches or unauthorised access.

The Energy Cost

Storing and processing large data sets such as in medical imaging, consume significant energy. **1 TB of data storage requires approximately 100 kWh per year**. A hospital's imaging department can generate tens/hundreds of terabytes per year, resulting in a substantial environmental footprint.

Personal Thoughts

AI's role in health governance has increased drastically. This digital era has the power to revolutionise patient care but it is not without risks. The question isn't whether AI should be in medical physics – we are not able to answer this anyway – but how we can use it responsibly and equitably.

Katryna Vella is a Medical Physicist in Diagnostic and Interventional Radiology, practicing within the Medical Imaging Department at Mater Dei Hospital, Malta. She is a member of the Malta Association of Medical Physics (MAMP) and a Steering Committee member of the Early Career SIG of EFOMP.

Building Europe's Nuclear Future: A Conversation with ENEN2+ Project Coordinators

Professor Gabriel Lazaro Pavel currently works at the Department of Power Production and Usage at the Polytechnic University of Bucharest. He currently serves as the Executive Director at the European Nuclear Education Network, which coordinates the ENEN2+ project.

Professor Csilla Pesznya is the Head of Radiation Protection Service and the Depute Head of Medical Physics at the Centre of Radiotherapy, National Institute of Oncology, and an Associate Professor at the Institute of Nuclear Techniques, Budapest University of Technology and Economics. Her current project is the ENEN2+ project.

Prof. Pesznyák and Prof. Pavel, thank you both for your time. Building on the success of ENEN+, ENEN2+ continues to play a vital role in reinforcing Europe's nuclear workforce. I'm eager to hear your perspectives.

Prof. Pavel, as ENEN2+ nears its two-year milestone, could you share some key figures on the support provided so far? How many learners have benefited, and what training or mobility opportunities have been offered?

Thank you. Indeed, with ENEN2+ we've reached a remarkable milestone. The Mobility Programme—targeting the full spectrum of the nuclear community within the EU ecosystem—was designed for three years with a goal of supporting 1,000 learners. We've already achieved that target within just two years.

The programme supports everyone from secondary school pupils to early-career professionals looking to upskill. Interestingly, most master's-level participants come from nuclear engineering, while early-career professionals predominantly represent the medical field. Gender-wise, males dominate engineering, while more females participate in medical-related mobility.

Prof. Pesznyák, ENEN2+ builds directly on ENEN+. In your view, what are the main innovations in this phase?

One major enhancement is the increased budget—€2.5 million—allowing us to reach more students and professionals. We've also launched a BSc/MSc thesis competition in nuclear topics. The first edition in Bratislava attracted over 100 applicants; this year's is being held in Budapest.

Moreover, we've initiated a networking task to connect young-generation and cross-professional organisations—such as ENS-YGN, IRPA-YGN, EFOMP, MELODI and FuseNet—to foster interdisciplinary collaboration among junior nuclear professionals.

We also place great emphasis on outreach to secondary schools. Initiatives include setting up a European network for science teachers, offering teacher workshops and nuclear summer schools for students in native languages, compiling educational materials, and identifying facilities for school visits.

Figure. The 2nd BSc and MSc thesis competition announcement.

Prof. Pavel, given your leadership in coordinating ENEN2+, how is the project currently managed across 51 institutions and multiple work packages?

Managing a project of this scale is no small task. To ensure effective operation, we've introduced an additional management layer. Work Package Leaders now play a key role in liaising with contributors. I work primarily with the WP Leaders and step in directly if needed. In addition to biannual project meetings, this structure ensures smooth coordination and rapid issue resolution.

Prof. Pesznyák, what ENEN2+ achievement are you most proud of so far?

That's a tough choice—it feels like choosing a favourite child! One highlight is the nuclear competition for secondary school students, now in its fourth year and set to take place in Bologna. Participation has grown from 25 students in 2019 to over 130 this year. I'm also proud of the success of our mobility programme and our efforts to strengthen education across all nuclear fields, from energy and radiation protection to medical applications.

Prof. Pavel, from your perspective, what has been the most rewarding outcome?

For me, it's the unity of the community. Whether it's organising a course, a summer school, or students proactively engaging in initiatives, the commitment and collaboration across the nuclear field have been truly rewarding.

Looking ahead, what are your hopes for ENEN2+? Prof. Pavel?

I hope ENEN2+ becomes the leading supporter of sector-specific communities—whether in medicine, engineering, safeguards, decommissioning, or innovation—and that it continues to align its focus with their outputs.

Prof. Pesznyák?

I fully agree. I would also stress the importance of talent development, youth networking, and communicating the peaceful benefits of nuclear science to both young people and the wider public.

Thank you both for your insights and ongoing contributions to ENEN2+ and our nuclear education community.

Eleni Skouridi is a medical physicist at the Bank of Cyprus Oncology Centre, working in Nuclear Medicine and Diagnostic Radiology. She previously led the integration of a radiation dose management system across Cypriot public hospitals and breast cancer screening centres. Her experience also includes roles in the Nuclear Medicine Department and the East Anglian Regional Radiation Protection Service at Cambridge University Hospitals, UK.

Portugal’s First Medical Physics Residency: Structuring the Future of the Profession

In Portugal, as in many other European countries, there has long been a recognised shortage of Medical Physics Experts (MPEs). This shortfall exists against a backdrop of rapid technological advancement and increasingly complex patient needs, both of which demand highly qualified professionals.

Although Decree-Law No. 108/2018 of 3 December established the legal framework for radiation protection by transposing Council Directive 2013/59/EURATOM into Portuguese law, it was only in March 2024 that the regulation defining the admission process for specialised training in medical physics was approved. This milestone marked significant progress in the recognition and formal development of the profession in Portugal. It has brought clarity and motivation to both current and aspiring professionals by providing a clearly defined path to obtaining the MPE title.

To apply for a medical physics residency in Portugal, candidates must hold a degree in Physics (EQF Level 6) or a related field with a strong emphasis on physics and mathematics. Additionally, a Master’s or PhD in Medical Physics (minimum EQF Level 7) is required.

Candidates who meet the academic prerequisites must then pass a national entrance examination assessing their scientific and technical knowledge. Admission is based on the examination score, with a minimum of 50 points required to qualify.

The residency programme spans 48 months (four years), consisting of 24 months of general training in medical physics and radiation protection, followed by 24 months of specialised training in a chosen field.

I underwent this evaluation process last year and am now part of Portugal’s first medical physics residency programme, specialising in Nuclear Medicine. This programme marks a transformative departure from the previous route to becoming an MPE, which was often vague and could take more than a decade of professional experience to achieve formal recognition. By contrast, the residency offers a structured curriculum, a clear timeline, and a transparent pathway to specialisation. This fosters not only individual professional development but also the advancement of the field as a whole in Portugal.

My colleagues and I are acutely aware that we form the first cohort to embark on this newly established residency. In many ways, we are a pilot generation—but we embrace this pioneering role. Someone had to go first, and we are proud to help lay the foundations for those who will follow. The journey ahead will no doubt present challenges, but we are committed to paving the way for future medical physicists. The success of this programme is vital—not only for us but for the entire profession. There is an urgent need for more trained specialists so that no one in the field feels overburdened or unsupported amidst increasing clinical demands.

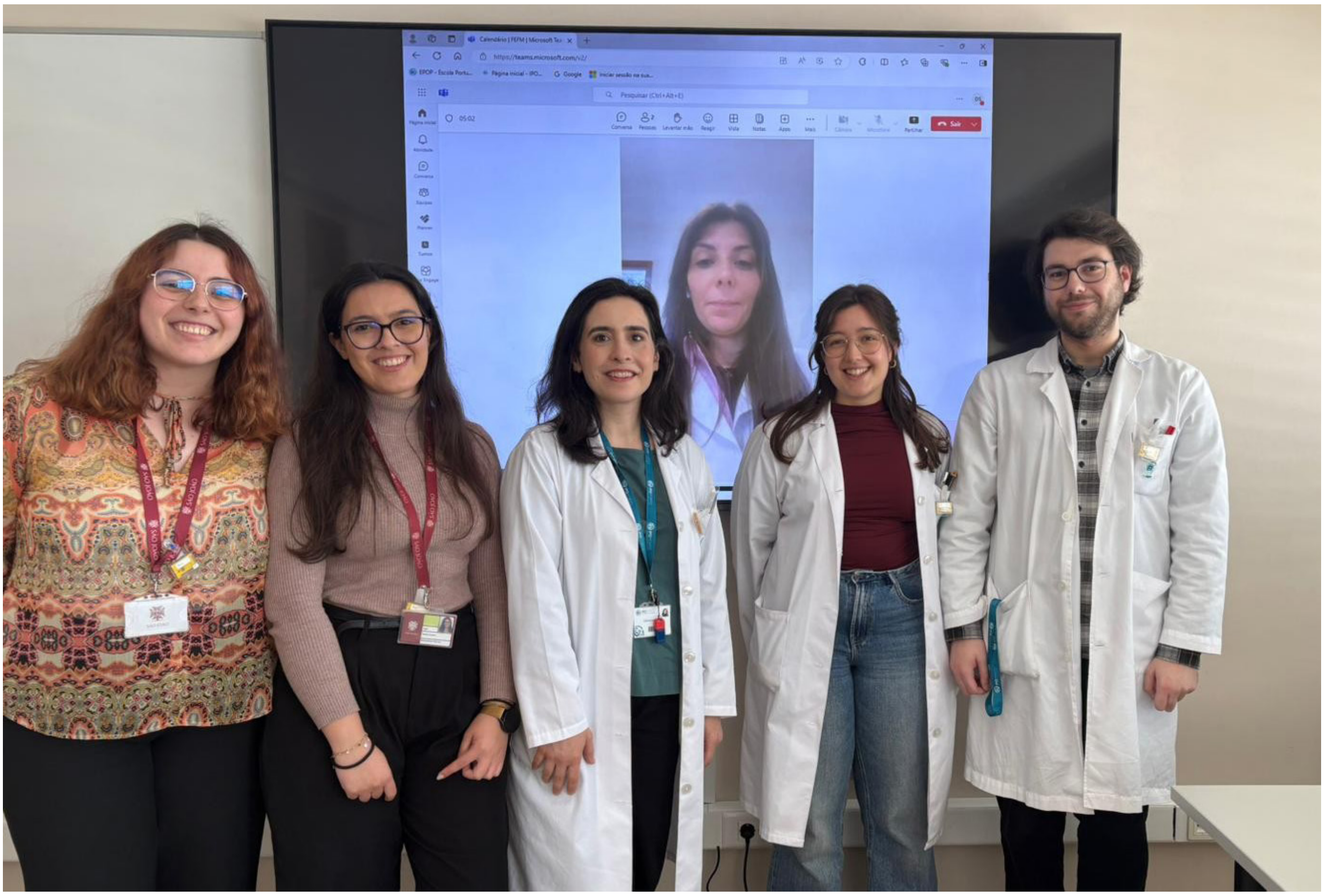


Figure 1. Medical Physics residents in training as part of Portugal's inaugural residency programme.

As you know, medical physics is a fascinating and diverse discipline, offering career paths ranging from diagnostic imaging to radiotherapy. But beyond its technical breadth, what truly defines our work is its impact on patients. Whether we are producing a single diagnostic image or ensuring the safe and precise delivery of radiotherapy, what we do matters. That is why we must continually strive for excellence.

The establishment of a formal residency programme is a crucial first step towards building a skilled, confident, and future-ready workforce. I am genuinely proud that Portugal has taken this bold and necessary step—one that will shape the future of medical physics in our country.

Rita Albergueiro is a Medical Physics resident specializing in Nuclear Medicine at the Local Health Unit of São João. She holds a master's in medical physics and collaborates with the IPO Porto Research Center in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP's C&P Committee in 2025.

Workflow Optimisation in Radiation Oncology: From Theory to Clinical Implementation

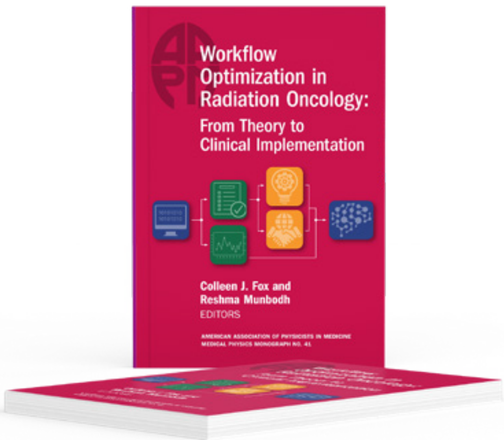


Figure. Optimisation in Radiation Oncology: From Theory to Clinical Implementation front page [1].

The book *Workflow Optimisation in Radiation Oncology: From Theory to Clinical Implementation*, authored by a team of 30 contributors, was published in 2024 by the American Association of Physicists in Medicine. It is primarily aimed at senior radiation oncologists, chief medical physicists, and project managers working in clinical settings.

With increasing digitalisation, a growing number of patients, rising time pressures, and the additional workload introduced by adaptive radiotherapy, workflow optimisation is becoming not just beneficial but essential. Optimising workflows and managing time effectively can have a direct impact on treatment outcomes, as studies have demonstrated a correlation between time-to-treatment initiation and clinical success.

The book, a product of an AAPM Summer School, is structured into 16 chapters. Chapters 1 to 6 provide foundational knowledge and introduce key management techniques, using examples drawn from the day-to-day operations of Dartmouth-Hitchcock's Radiation Oncology Department. The basics of process analysis, capacity analysis, and the theory of constraints are explained in a clear and accessible manner. Personal testimonials and practical templates help readers quickly grasp the material, even without a background in management.

Chapters from 7 onwards shift towards clinical implementation. The editors recommend reading Chapters 1–6 and Chapter 16 (Beyond the Numbers) first, then selecting other chapters based on individual focus areas — a logical and user-friendly approach.

In the initial chapters, essential tools such as Gantt charts, Lean Six Sigma methodologies, and process flow diagrams are introduced with helpful illustrations. Chapter 3 delves into designing for workflow robustness, introducing quality checklists (QCLs), fault tree analysis (FTA), and failure modes and effects analysis (FMEA). Concepts from industrial process improvement and operational theory are thoughtfully adapted to healthcare to enhance safety and efficiency [1].

Chapter 4 highlights the importance of standardisation, using examples such as organ-at-risk nomenclature, target naming, and constraint definitions. It also provides practical guidelines for implementing these standards. Chapter 5, titled Measuring a System, offers a detailed guide through the stages of data acquisition, analysis, and extraction, supported by numerical examples.

Chapter 6 introduces Modelling and Controlling a System, with operational research (OR) as the central theme. OR is shown to play a key role in analysing and managing complex systems, distinguishing between static and dynamic modelling in clinical workflows. Artificial intelligence is also presented as a digital modelling tool, illustrated using examples from radiotherapy.

Subchapters 7.2 to 7.8 present strategies to improve the efficiency of treatment planning, reduce time during the treatment process, and explore various OR methods. Chapter 8 focuses on resource allocation and provides a historical overview of radiation oncology workflow development since 2005, covering different staffing models and fractionation strategies.

Chapter 9 addresses time management, career satisfaction, and work-life balance, topics that are especially relevant given the high burnout rates within radiation oncology. It introduces practical approaches to improve staff well-being and satisfaction.

Chapter 10 reviews the complexities of contouring, comparing manual and automated approaches, and explores future challenges, including ethical issues and the ongoing need for human oversight. Chapters 11 to 13 delve into AI-supported quality assurance, treatment planning strategies, and risk management through case-based examples.

Chapter 14 discusses the implementation of adaptive radiotherapy (ART), highlighting the associated changes in workflows, staff training, and the critical role of communication. Chapter 15 continues this theme, focusing specifically on the importance of communication skills for medical physicists.

Finally, Chapter 16, Beyond the Numbers, offers reflections on change management, the impact of emerging technologies in the workplace, and their effect on staff.

In summary, *Workflow Optimisation in Radiation Oncology* is an outstanding and timely resource for radiotherapy professionals involved in workflow design and implementation. Its accessible structure and wealth of practical examples make it a valuable tool for both newcomers and experienced professionals aiming to enhance their clinical practice.

References:

[1] Numerato, D., D. Salvatore, and G. Fattore. (2012). "The impact of management on medical professionalism: A review." Sociology of Health & Illness. 34(4):626-644. https://doi.org/10.1111/j.1467-9566.2011.01393.x

Dr Katharina Schmidt works in Medical Physics at the Department of Radiation Oncology, Krankenhaus Barmherzige Brüder Regensburg. She began her PhD in 2019 at University Hospital LMU Munich, leading telematics and digitalisation projects. In 2022, she became team leader of Medical Physics Experts in Radiology, and in 2024 joined Dr Scherer's team to broaden her expertise in radiotherapy and nuclear medicine.

Dr Josef Scherer is Head of Medical Physics at the Department of Radiation Oncology, Krankenhaus Barmherzige Brüder Regensburg (since 2005). He began his career in 1995 at University Hospital Regensburg, earning a PhD with a thesis on Monte Carlo methods in radiotherapy. In 2001, he received the EFOMP Galileo-Galilei Award for the best medical physics paper of 1999–2000.

Thoughts on Science Fiction

Figure. AI-generated image on the topic of Thoughts on Science Fiction.

Many people associate science fiction with action-driven franchises like *Star Wars* or *Star Trek*—full of spectacle and space battles—or view it as an outdated attempt to predict the future, following in the footsteps of Jules Verne. These perceptions, though widespread, are often superficial and misleading. The genre's occasional flirtation with prediction has frequently led to inaccurate or overly simplistic visions of the future. This self-awareness gave rise to what is known as Sturgeon's Law: *"ninety percent of everything is crap"*—a rule that applies as much to human behaviour as it does to literature.

A large portion of science fiction narratives involve time travel or interstellar voyages—concepts still far from becoming reality. Physics, in recent years, appears to have stagnated, increasingly overlapping with engineering. However, some narratives approach reality—at least metaphorically. Two particularly relevant examples are Aldous Huxley's *Brave New World* (1932) and George Orwell's *1984* (1949). These works are deeply ideological, with both authors developing narratives around dangers they foresaw in their own societies—dangers which, when taken to their extremes, result in eugenics or total authoritarianism.

What is especially compelling is the internal, psychological dimension of the characters. The best science fiction tries to answer a central question: *How does a person live in a world they no longer understand, or one that changes faster than they can keep up with?* With the recent rise of technologies such as artificial intelligence and social media, this question seems more relevant than ever.

An expression of this estrangement can be found in Philip K. Dick's *The Man in the High Castle* (1962). In this alternate history, the characters find themselves in a reality that feels unreal—because it is. The narrative imagines a world in which the Nazis have won the Second World War, and this dissonance places the characters in a state of existential confusion, where reality seems fundamentally broken. They attempt to find meaning and identity through external objects and cultural symbols, often without success.

In contrast, the protagonist of Ursula K. Le Guin's *The Dispossessed* (1974) has a personality anchored in ideas, and is less consumed by internal confusion. In this novel, anarchists are exiled to a barren moon, Anarres, resulting in the formation of two contrasting societies: one harsh but idealistic, and the other—Urras—technologically advanced, materially prosperous, and deeply hierarchical.

Neither society is ideal, but Urras bears a closer resemblance to our own—materially rich and technologically driven. On Anarres, the sense of community helps people confront their struggles, and suffering itself becomes a source of unity. This contrast highlights the power of ideology—or belief systems—and how they can offer strength and direction in the face of adversity. Urras feels closer to today's world, where idealists seem to have vanished. Despite the dangers that strong beliefs can bring, perhaps living without meaningful ideas is an even greater risk.

Hugo Trindade is a freelance medical physicist and radiation safety officer, educated at the Faculdade de Ciências, Universidade de Lisboa.

What do Medical Physicists do During the Summer?

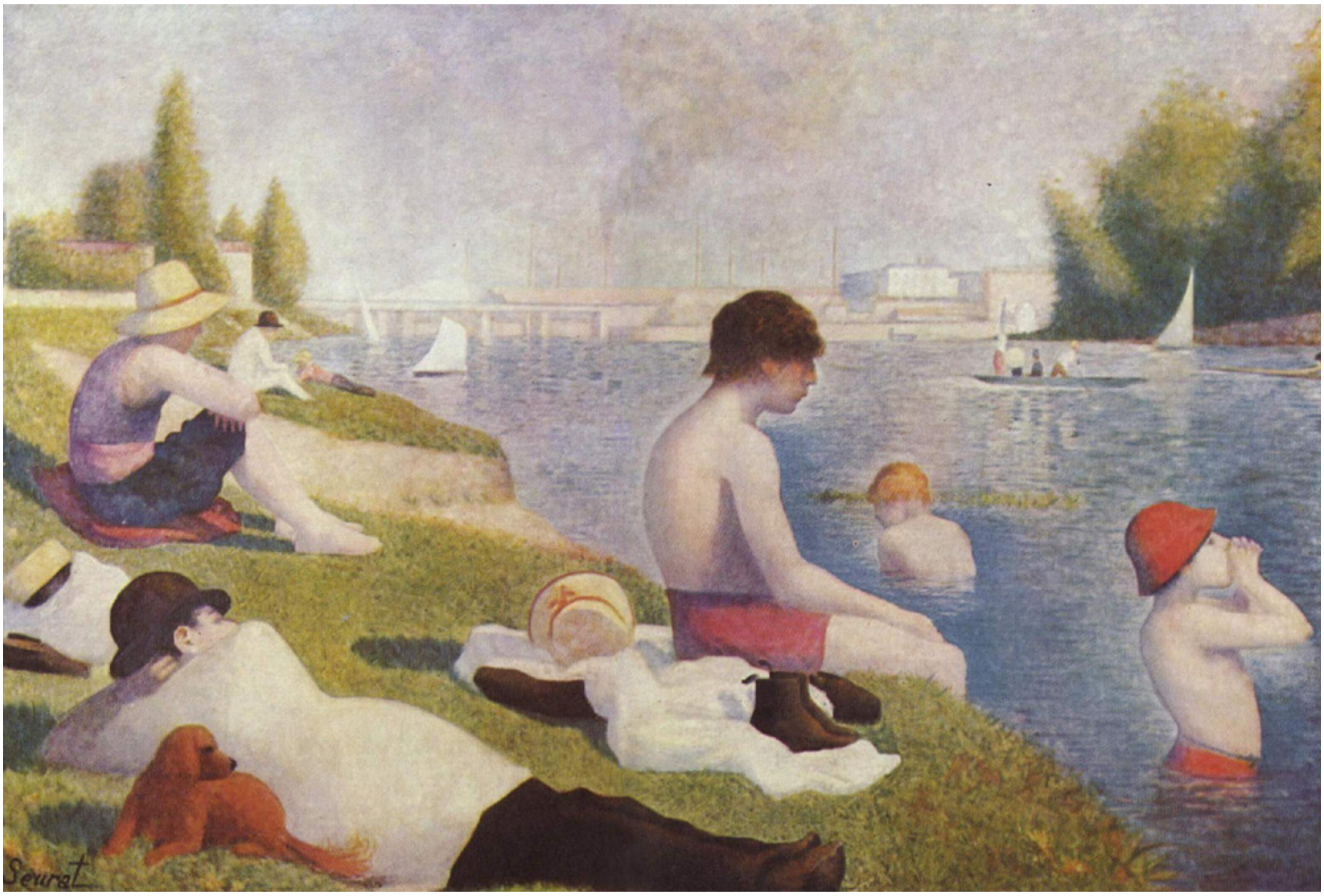


Figure. Summer joy in the city.

We often imagine physicists as diligent, serious types—not exactly the life and soul of the party. And, let's be honest, some of us do fit the stereotype. But we're not all Sheldon Coopers. (Although, personally, I wouldn't mind having Sheldon as a close friend.)

Summer, however, can be a rather glorious time for medical physicists. After months spent working in hospital basements (yes, we really don't see much daylight), we welcome the opportunity to soak up some much-needed vitamin D. But we don't just emerge blinking into the sun—we also dive headfirst into some of the most exciting scientific events of the year.

Summer schools are a seasonal highlight. This year, the *Frontiers in Medical Physics* course will take place in the picturesque town of Varenna, nestled on the shores of Lake Como. The topics are as diverse as they are cutting-edge: MRI, X-ray imaging, radiotherapy innovations, and AI applications. It's the perfect blend—world-class lectures by day, lakeside aperitivos and sunset strolls by evening. What more could one ask for?

In July, Prague will host the *ESMPE School of Proton Therapy*, focusing on the latest developments in proton treatments. Topics will range from the fundamentals of proton physics and machine acceptance testing, to treatment planning, dosimetry, imaging strategies tailored to proton therapy, and emerging technologies such as FLASH and spatially fractionated radiotherapy (SFRT). And beyond the physics, Prague offers cobbled streets, breathtaking views—and perhaps a well-earned Pilsner after a day of lectures.

The summer will round off with the hybrid School on *Functional Imaging for Diagnostics and Therapy*, jointly organised by the German Cancer Research Center (DKFZ) and the Heidelberg Institute for Radiation Oncology (HIRO). Designed especially for students—from undergraduates to postdocs and residents—this school provides a deep dive into a topic that is fast gaining ground in both clinical and research contexts.

With clinical workloads often easing slightly over the summer, many physicists use this time to revisit long-postponed projects, delve into neglected datasets, or finally begin drafting that paper that's been quietly nagging them all year. It's also the season for dusting off those congress notebooks, filled with scrawled ideas and half-formed concepts, and giving them the attention they deserve.

And what about life beyond work? Interestingly, medical physicists around the globe seem to share a common love for nature. Hiking, rock climbing, and mountain sports are firm favourites—perhaps as a counterbalance to all those hours spent underground. Many departments take the chance to organise team-building activities, group outings, or social events. Because yes—physicists enjoy a bit of fun too.

So, what do medical physicists do in the summer? We learn, we explore, we climb, we collaborate... and, occasionally, we even relax.

Virginia Piva is a Medical Physics Resident at Niguarda Hospital in Milan and research fellow in particle therapy at the National Institue for Nuclear Physics. Her main professional interests are advances in radiotherapy and implementation of AI techniques in the clinic. Alongside the residency, she is committed to promoting public understanding of medical physics, using science communication to spotlight the field's value. She joined the C&P Committee in 2024.

"Medical Physics for Image-Guided Cancer Therapy" School in Bad Honnef

Figure. Poster of the image-guided cancer therapy school in Bad Honnenf.

Physics has transformed cancer medicine, not only through the development of imaging and treatment techniques based on physical principles, but also by providing a deeper physical understanding of the epidemiology, growth modelling and biophysics of cancer. To this end, on behalf of the German Physics Society (DPG), we are organising a School especially designed for students and young researchers in physics, biomedical engineering, and computational sciences who wish to expand their knowledge of physics as applied to cancer medicine. The event is mainly targeting students pursuing their master's studies and early-stage doctoral researchers.

The "Medical physics for image-guided cancer therapy" school, endorsed by the German Medical Physics Society and EFOMP, will span the arc from the physics of cancer to the physics of imaging for better cancer diagnosis as well as the physics and technology of cancer treatment. It will review the evolution and current state of the art of physics in cancer research, diagnosis, and treatment. In the inspiring setting of the Physics Centre of Bad Honnef, in the north of Germany, the students will have ample possibilities for networking and exchange with a faculty comprising world-renowned experts in their respective fields. The lecturing programme will be rounded off by an excursion and two poster sessions to foster interactions between the students, their peers and the faculty members. At the end of the week, the participants will have a good overview of the field of medical physics, its active research areas, and they will have made connections with some key players in the field. This can help them to decide if medical physics could become a career path for them. Participants already in medical physics will gain insights into other areas in the field.

More information about the school can be found here. The registration deadline is 30 June 2025, and we are looking forward to numerous participants, so please spread the word among your networks!

Katia Parodi is Professor and Chair of Medical Physics at Ludwig-Maximilians-Universität München since 2012. Her research focuses on precision image-guided radiotherapy, advanced computational modelling, and in-vivo ion range monitoring. She trained in Italy, Germany, and the USA before leading research at the Heidelberg Ion Therapy Center.

Franz Pfeiffer has been Chair of Biomedical Physics at TUM since 2009. He studied physics in Munich and earned doctorates in Grenoble and Saarbrücken. His research focuses on advanced X-ray imaging, pioneering phase contrast and dark field techniques. He is also executive director of the Munich Institute of Biomedical Engineering.

Thomas Bortfeld earned his PhD in Physics from Heidelberg in 1990. He pioneered intensity-modulated radiation therapy (IMRT), enabling its first clinical use in 1995. Now Chief of Radiation Biophysics at MGH and Professor at Harvard, his research focuses on optimising and personalising radiation therapy and advancing proton therapy access.

5th edition Data Analysis with Python for Medical Physics Course

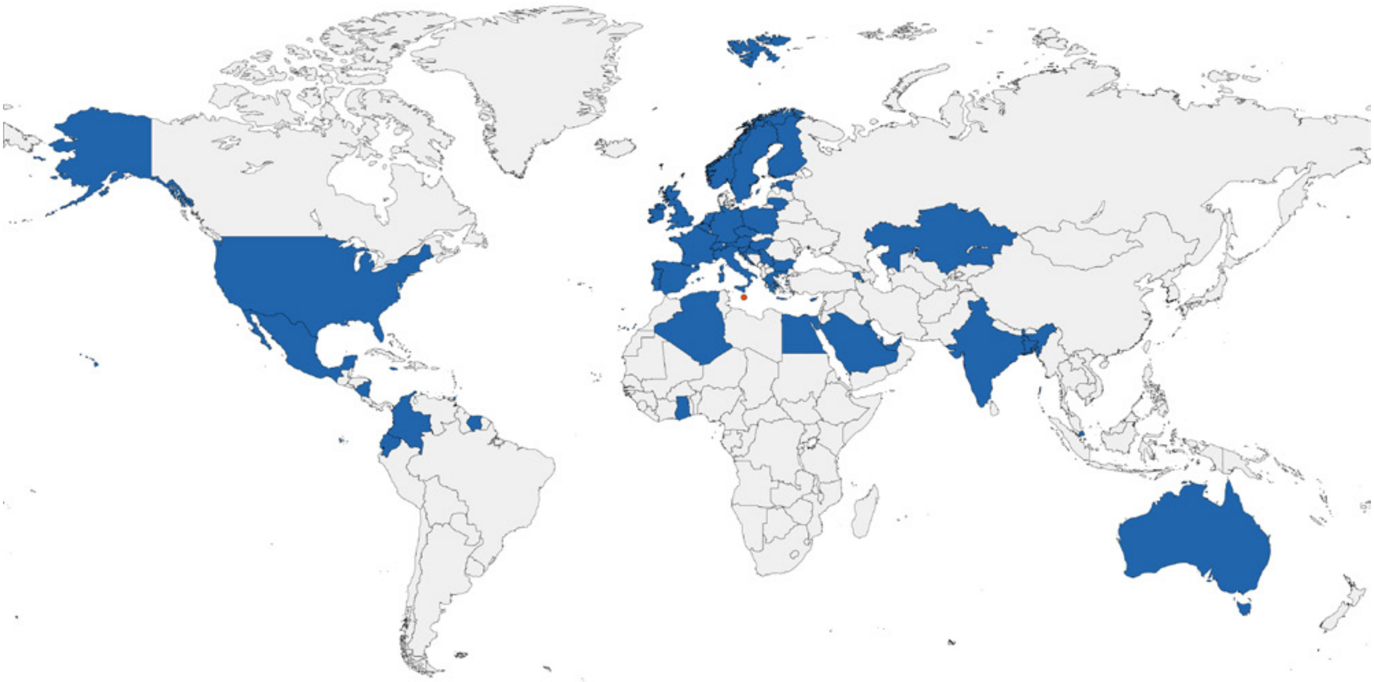


Figure. Participants joined our Python course from all over the world!

The Malta Association of Medical Physics is pleased to announce its 5th edition of the EBAMP accredited international course on "Data Analysis with Python for Medical Physics" from 27th to 29th of November 2025. This course is fully online and held in real-time (i.e. participants are expected to log-in each day at 09:00 CET). Details and programme here. The previous four editions have been very well received, with over 200 participants joining from many countries in and outside of Europe. Praised for its content, relevance and expert instruction, the Association continually receives requests to offer re-runs of this course.

The course is designed to provide medical physicists with an introduction to basic programming concepts in Python. The course will introduce the tools necessary for automated data collection, cleaning, straightforward application of aggregate statistics and plotting. By providing an equal balance of theory and hands-on practice, the course ensures you gain practical experience and you can start working with these tools immediately. Course tutors will be available during the hands-on exercises to provide one-on-one assistance in dedicated breakout rooms. By the end of the course, you will become confident in setting up automated pipelines for data analyses for a wide range of medical physics applications.

The course covers an introduction to data types and data structures, navigating an Integrated Development Environment, reading and writing Excel and CSV files, managing tabular data with

Pandas, extracting DICOM information using PyDicom, generating reproducible figures using Matplotlib and Seaborn, and an overview of the PyLinac library for automated Radiotherapy image quality QC testing.

You will be provided with instructions to prepare your laptop with a working Python installation prior to the course. You will have the opportunity to get in touch with the tutors to assist with any installation difficulties. You will also be given the lecture notes ahead of time for your perusal. The course is targeted towards clinical or academic medical physicists, medical physics experts or medical physics trainees working in any area of medical physics. The course does not require any programming knowledge prerequisites. However it is content-rich and fast-paced, so some past programming exposure may be beneficial for some. Registration is open via this link .

Testimonials:
"Lots of information in just three days. Would be enough for a semester course... But all was well-explained, and the materials (slides/notebooks) are very well prepared. Good job!
Thank you!"

"Well done to the whole team for delivering a really excellent course - this would have to be the best short-duration training (virtual or in-person) in any topic that I have ever received. I found it extremely well-organised"

Eric Pace is the main tutor for this course and regularly teaches python programming topics to the students of the University of Malta and abroad. Eric holds a B.Sc. (Hons) Physics and Computer Science & AI, and an M.Sc. Medical Physics and is an MPE and RPE in DIR. He is a full time academic with 10 years of clinical work experience. His interests include patient-specific clinical protocol optimisation and automation.

David Scicluna is the second main tutor for this course and has longstanding experience with Python for automation and AI. David holds a B.Eng. (Hons) Electrical and Electronics Engineering, and an M.Sc. ICT, and an M.Sc. Medical Physics and has just completed his traineeship in DIR. His research interests include emerging AI technologies, with particular focus on medical image segmentation, ethical concerns related to AI and generative AI.

56th annual congress of the German Society for Medical Physics (DGMP)

Figure. Official poster of the DGMP 2025.

The annual congress of the German Society for Medical Physics (DGMP) will be held from the 24th to the 27th September 2025 in Berlin. It is the largest meeting of German-speaking Medical Physicists in Europe, covering not only traditional Medical Physics fields like radiotherapy, nuclear medicine as well as X-ray and MRI-imaging, but will also include a track on audiology. Furthermore, the topic of biomedical optics will be one of the dedicated sessions at this congress for the first time. This is one reason why the congress organisers Markus Buchgeister from the Berliner Hochschule für Technik and Andrea Denker from the Helmholtz-Zentrum Berlin have chosen a colourful eye as the emblem for this congress. The other reason is the long and very successful tradition of more than 27 years of proton radiotherapy of ocular tumours at the Helmholtz-Zentrum in collaboration with the Charité – Universitätsmedizin Berlin with more than 4900 patients. Special tours will be offered to visit this unique facility near the famous Wannsee of Berlin. Another dedicated session will be devoted to the training and education in Medical Physics with an emphasis on e-learning as another "first" at this meeting, catching up with the already well-established series of webinars of the "DGMP-Academy".

A long and well-established tradition at our DGMP - congress is the track of our early career group called "junge Medizinphysik", that is organised from young Medical Physicists for young Medical Physicists, bringing up their special issues for discussion. Nevertheless, a congress is not only a place to exchange the latest scientific news but also to meet old friends again as well as make connections with new colleagues. As respect for our environment and part of the initiative "DGMP goes green", the congress fee includes a CO^2-reduction fee to cover the average travelling climate costs of the participants, and the catering again will be arranged to minimise the waste of food.

On top, you will have a splendid time at the congress dinner evening at the historic Harnack-House of the Max-Planck-Society, which is very close to the congress venue at the Henry-Ford-building of the Free University of Berlin at Berlin-Dahlem. Keep in mind that the Harnack-House was the place where famous physicists like Albert Einstein walked in and out about a century ago. If you do not mind listening to talks mainly in German, you are cordially welcome to our DGMP-congress, as Berlin is an international capital where conversations in English are no problem.

Markus Buchgeister and Andrea Denker
DGMP 2025 congress presidents

Markus Buchgeister is a medical physicist and Professor of Medical Radiation Physics at the Berliner Hochschule für Technik (BHT) since 2010. He previously worked in Radiation Oncology at the University Clinic of Tübingen. He has held leadership roles within DGMP and EFOMP, including Chair of EFOMP's Education and Training Committee. His interests include radiotherapy QA, public engagement, and medical physics education.

Andrea Denker is a physicist specialising in accelerator physics for medical applications. Since 2007, she has led the Proton Therapy Department at Helmholtz-Zentrum Berlin and holds a joint professorship at Beuth University, focusing on beam diagnostics, dosimetry, and accelerator systems.

EFOMP at ECR 2025: A Strong Presence in Europe's Largest Radiology Congress

The European Congress of Radiology (ECR) remains the largest and most prestigious gathering of radiology and imaging professionals in Europe. The 2025 edition, held in Vienna from February 26 to March 2, embraced the theme 'PLANET RADIOLOGY', underscoring how medical imaging not only advances healthcare but also shapes the world around us. Through an immersive programme of scientific sessions, cutting-edge innovations, and networking opportunities, ECR 2025 successfully brought together radiologists, imaging specialists, and industry leaders from across the globe.

As always, the European Federation of Organisations for Medical Physics (EFOMP) was actively engaged throughout the event. Representing the medical physics community, EFOMP took part in multiple aspects of the congress, further strengthening its mission to foster collaboration and knowledge exchange in medical imaging and radiological sciences.

EFOMP's Presence at the International Village

A key highlight of EFOMP's participation was its presence at the International Village, where numerous international and national organisations and societies gathered. The EFOMP booth was a hub of activity, welcoming conference attendees eager to learn about the latest EFOMP initiatives, events, and opportunities. EFOMP Secretary General Brenda Byrne, Past President Paddy Gilligan, and various committee members—along with myself, as Vice-Convener of EFOMP's Special Interest Group (SIG) for Early Career—were available to engage with attendees, answer questions, and share insights into the world of medical physics.

Figure 1. The EFOMP booth at the ECR, cheerfully staffed by EFOMP Secretary General Brenda Byrne and Antonio Jreije.

Exploring the ECR Exhibition and Industry Innovations

One of the exciting aspects of ECR 2025 was its vast exhibition, featuring over 240 companies and startups showcasing their newest products, solutions, and technological advancements. Walking through the busy exhibition hall was an incredible experience, allowing us to interact with industry leaders and explore innovations that are shaping the future of medical imaging. Moreover, EFOMP representatives had the chance to meet in person with some of our industry partners, fostering relationships that are essential for advancing medical physics and imaging technology.

Figure 2. Leadership meeting at the ECR.

Strengthening EFOMP-ESR Partnership

EFOMP has a long-standing and fruitful collaboration with the European Society of Radiology (ESR), a relationship that continues to grow stronger. During ECR 2025, representatives from both organisations convened for a Leadership Meeting, where they shared recent updates, discussed recent developments, and explored opportunities for future collaboration. Key areas of planned cooperation include joint educational initiatives aimed at enhancing knowledge exchange, and efforts to enhance communication between radiologists and medical physicists, ensuring both fields work in synergy to improve patient care.

Physics in Medical Imaging Sessions: A Packed Audience

EFOMP representatives were also actively involved in the Physics in Medical Imaging Subcommittee, which organised the 'Physics in Imaging' sessions at ECR 2025. These sessions, widely attended and highly engaging, covered a wide range of topics, from advancements in CT technology and their clinical applications, artificial intelligence applications in image reconstruction, and the new EFOMP protocol for quality control of dynamic X-ray imaging systems. Each session provided a platform to highlight the role of medical physics in imaging advancement and optimization, drawing strong interest from attendees.

EFOMP/ECR Physics Social Table Quiz: A Tradition Lives On

Beyond the scientific sessions and meetings, ECR 2025 also provided opportunities for socialising and networking. A highlight of the event was the 'EFOMP/ECR Physics Social Table Quiz', a now-traditional gathering hosted at Charlie P's Irish Pub. This free event was organised by EFOMP's Past President Paddy Gilligan, with generous contributions from Amray Europe and Hospital Services Limited Ireland. It was truly memorable evening of friendship, competition, and karaoke sessions, reinforcing the strong connections within our community.

Figure 3. EFOMP at the annual pub quiz for medical physicists during the ECR.

Antonio Jreije is a Medical Physicist at Vilnius University Hospital Santaros Klinikos, Lithuania. He is the Vice Convener of EFOMP Early Career SIG and a member of EURAMED Communications Committee.

Empowering Tomorrow's Leaders: Insights from the EFOMP Leadership Course

The EFOMP Leadership Course, "Leading Medical Physics to a Sustainable Future," took place from 17th to 19th March 2025 in Brussels and online. Organised by EFOMP in collaboration with ECO, EUTEMPE, and ENEN, the course aimed to strengthen leadership within the medical physics community by offering strategic insights, valuable networking opportunities, and a deeper understanding of influential structures within European healthcare systems.

A total of 80 participants took part, with 30 attending in person and 50 joining remotely.

The programme featured a mix of lectures and interactive workshops, covering a wide range of topics such as leadership styles, strategic planning, sustainability, financial management, and patient-centred care. A key theme throughout was the idea that leadership in medical physics goes beyond administrative management—centred instead on mission, vision, and values.

As an online participant, I found the course intellectually stimulating and professionally rewarding. The hands-on workshops, conducted via Zoom breakout rooms, allowed for meaningful collaboration with colleagues from as far afield as South Africa and Vietnam. This global engagement enriched discussions with diverse perspectives and created a truly international learning environment.

The online format was flexible and accessible, supported by high-quality streaming and interactive features. However, one notable limitation was the absence of informal interactions, which are often the most effective for building deeper personal and professional connections. Structured discussions worked well, but the spontaneity of face-to-face networking was inevitably missed.

Figure 1. Early-Career Medical Physicists Participating in the EFOMP Leadership Course.

For on-site attendees, the experience brought a complementary and powerful set of benefits. Emilia described the course as "truly transformative,"

Figure 2. On-Site Participants of the EFOMP Leadership Course 2025.

particularly valuing the opportunity to explore different leadership styles and begin shaping her own leadership identity. She highlighted Mariken Zijlmans' session on vision-driven leadership and praised James Louttit's "lenses" model, which offered practical tools for prioritisation, time management, and effective team dynamics. His book Leading Impactful Teams was widely recommended.

Bianca noted how the course clarified the importance of starting with "why"—understanding one's core mission and aligning it with strategic outreach and engagement. She found Aaron McLoughlin's session on advocacy particularly insightful, offering real-world tools to influence healthcare policy and drive sustainable change.

Both participants emphasised the unique value of being physically present. Emilia shared that informal moments—coffee breaks, evening events, and impromptu corridor conversations—led to meaningful connections and even future collaborations. "Being there gave me a real sense of belonging to a vibrant, supportive community," she said. She also reflected on being chosen as a group leader during a workshop, despite being one of the youngest attendees. The experience pushed her beyond her comfort zone and significantly boosted her confidence.

Bianca echoed this sentiment, describing how in-person conversations gave her a moment to reflect on her own professional journey. “It made me pause and realise how far I’ve come since starting as a medical physicist three years ago. It was a chance to acknowledge the impact of my work before moving on to the next goal”.

Both strongly recommended attending the course in person if possible. While the online format was effective and inclusive, they agreed that in-person interaction brought emotional depth, spontaneity, and connection that is hard to replicate virtually.

In conclusion, whether experienced virtually or on-site, the EFOMP Leadership Course proved to be a highly valuable and inspiring initiative. It deepened participants’ understanding of leadership, created space for reflection and personal growth, and built bridges across borders, generations, and levels of experience. As the landscape of medical physics continues to evolve, initiatives like this are essential to empower the next generation of leaders.

Rita Albergueiro is a Medical Physics resident specialising in Nuclear Medicine at the Local Health Unit of São João. She holds Master's in Medical Physics and collaborates with the IPO Porto Research Center in projects on Medical Physics, Radiobiology, and Radiation Protection. She joined EFOMP’s C&P Committee in 2025.

Bianca Cotoi is a Medical Physicist with over three years of clinical experience in Radiotherapy and a Master’s Degree in Medical Physics. A cancer survivor herself, she combines technical precision with empathy and insight. Inquisitive and people-oriented, she is passionate about innovative technologies and seeks continuous growth through international courses, training, and collaboration.

Emilia David is a 2024 graduate with a Master’s in Medical Physics, specialising in Radiotherapy. She currently works as a Medical Physicist, providing consultancy in medical physics and radiation protection for private and public medical units in Romania, through a specialised company, with additional involvement in LINAC commissioning support as part of clinical implementation processes.

ESTRO 2025 in Vienna: Science, Community, and Collaboration

From 2nd to 6th May, ESTRO 2025 took place in the beautiful city of Vienna, bringing together radiation oncology professionals, researchers, and industry partners from across Europe and beyond. As always, the congress offered an excellent platform for sharing knowledge, exploring new technologies, and strengthening ties within our multidisciplinary community.

Among the many inspiring sessions, key topics included artificial intelligence in clinical workflows, the clinical implementation of FLASH radiotherapy, and the growing role of radiomics and imaging biomarkers. Discussions reflected a strong emphasis on patient-centred innovation and data-driven decision-making.

A particular highlight was the Joint ESTRO–EFOMP session held on Monday morning, titled: "The Rise of Photon-Counting CT: Challenges and Opportunities."

Chaired by Cristina Garibaldi (Italy) and Efi Koutsouveli (Greece, EFOMP President), this symposium examined the transformative potential of photon-counting computed tomography (CT)—an emerging technique poised to revolutionise both imaging and therapy. The session focused on photon-counting CT's ability to enhance image quality, reduce radiation dose, and open new diagnostic possibilities—particularly relevant in radiotherapy. Presenters addressed technical advancements and practical challenges associated with implementing spectral photon-counting CT in clinical settings, offering valuable insights into its future role in oncology. The session was well-attended and generated lively discussion, underscoring the growing interest in this cutting-edge technology and reinforcing the crucial role of medical physicists in translating innovation into impactful clinical practice.

Figure 1. Cristina Garibaldi and Efi Koutsouveli chairing the Joint ESTRO–EFOMP session.

Beyond the scientific programme, EFOMP hosted a dedicated booth in the exhibition area—a welcoming space that quickly became a hub for information, networking, and informal exchange. The booth was expertly coordinated by Leticia Irazola Rosales (Chair of the EFOMP Early Career Special Interest Group) and Virginia Piva (member of EFOMP's Communications and Publications Committee), who actively engaged with visitors and showcased EFOMP's ongoing projects, educational activities, and opportunities within working and special interest groups. The booth also provided an excellent occasion to raise awareness of EFOMP's mission and to foster cross-country and intergenerational connections within the medical physics community.

Figure 2. Leticia, Virginia and Carlotta, Immacolata two young physicts.

Our Early Career community played a central role throughout the event. Several young physicists volunteered at the booth, contributed to social media outreach, and collected feedback from peers. Many early-career attendees expressed their appreciation for the visibility given to their work and their enthusiasm for becoming more actively involved in EFOMP's initiatives. Informal exchanges, both at the booth and during networking events, helped to build a strong sense of belonging and motivation.

ESTRO 2025 offered more than just scientific updates—it also provided space for meaningful conversations, new ideas, and renewed inspiration. Whether attending talks, visiting the exhibition, or reconnecting with colleagues, the atmosphere was one of openness and collaboration. We are already looking forward to the next edition—and to continuing to build bridges across disciplines and generations within the radiation oncology family.

Cinzia Talamonti is Associate Professor of Medical Physics at the University of Florence and Head of the Radiologic Technology School. Her research focuses on advanced radiotherapy and AI in medicine. She is a member of the AIFM Scientific Committee and the EFOMP Communications and Publications Committee.

Virginia Piva is a Medical Physics Resident at Niguarda Hospital, Milan, and a research fellow in particle therapy at the National Institute for Nuclear Physics. Her interests include radiotherapy advancements and clinical AI applications. She also promotes public understanding of medical physics through science communication and joined the EFOMP Communications and Publications Committee in 2024.

Join the Global Medical Physics Community at IUPESM 2025

Figure. Official poster of the IUPESM World Congress 2025.

The International Union for Physical and Engineering Sciences in Medicine (IUPESM) World Congress 2025 will take place in Adelaide, South Australia, from 29 September to 4 October, bringing together medical physicists, biomedical engineers, and related professionals for one of the largest global gatherings in our field.

Regularly ranked among the world's top ten most liveable cities, Adelaide serves as a gateway to world-renowned wine regions, pristine beaches, and the stunning Flinders Ranges.

The World Congress will feature a distinguished line-up of plenary and keynote speakers under the theme: *"Bridging the Gap: Science, Technology, and Clinical Practice for a Sustainable World."* The opening plenary will be delivered by Dr Lars Juhl Jensen (Denmark), a leading bioinformatics researcher known for his work in computational biology and AI integration in healthcare.

Further plenary speakers include:

- Dr Fiona Adshead, Chair of the UK's Sustainable Healthcare Coalition

- Prof Maryellen Giger (University of Chicago), a pioneer in AI-driven cancer diagnostics and developer of QuantX, the first FDA-cleared machine learning system for cancer diagnosis

- Prof Simon Cherry (UC Davis), a leading authority in molecular imaging and whole-body PET-CT

For regular speaker updates, visit this website.

The Congress will explore a broad spectrum of cutting-edge topics in medical physics and biomedical engineering. Themes include advanced medical imaging, innovations in radiotherapy, AI and machine learning in healthcare, robotics and automation, personalised medicine, and sustainable medical technologies. Special emphasis will be placed on translational research and the integration of emerging technologies into clinical practice.

Numerous joint symposia will promote international collaboration and the exchange of best practices across regions. Notably, sessions focused on global health and the role of medical physics and biomedical engineering in addressing healthcare disparities worldwide will be featured. EFOMP and its national member organisations will participate actively, with details on specific contributions to be announced in due course.

For European colleagues, IUPESM 2025 presents a valuable opportunity to connect with a truly international network, explore global innovations, and foster lasting collaborations. The Congress also offers early-bird rates for early-career professionals and students, as well as travel grants to support participants from low- and middle-income countries. Dedicated networking events will help facilitate meaningful connections between international attendees.

On behalf of the organising committee, **Prof Eva Bezak**, MP Convenor for IUPESM WC2025, warmly invites all EFOMP members and colleagues across Europe to join us in Adelaide. This promises to be an exceptional opportunity to deepen your expertise and experience the unique spirit and hospitality of Australia.

We look forward to welcoming you!

Cinzia Talamonti is Associate Professor of Medical Physics at the University of Florence and Head of the Radiologic Technology School. Her research focuses on advanced radiotherapy and AI in medicine. She is a member of the AIFM Scientific Committee and the EFOMP Communications and Publications Committee.

Making a Splash

In this article, Karena and Amanda share their journey through a fresh and exciting Physics learning adventure.

Students from South East Technological University, Ireland recently dove – literally - into a fresh and exciting approach to learning physics. In an activity entitled *"Physics Through Outdoor-based Active Learning,"* almost 100 students traded their lecture halls and laboratories for the rolling waves of Tramore, Co. Waterford. The goal? To explore fundamental physics concepts not through textbooks, but through the movement and thrill of surfing. This innovative initiative brought together first year students from various health and sports science programmes, who Dr. Amanda Barry explains "can find physics challenging or disconnected from real life".

The day began on land, with Amanda and her Physics colleague, Dr. Gary Cahill, revisiting key physics concepts covered throughout the year such as density, pressure, inertia, centre of mass and forces including gravity, buoyancy, and friction – each thoughtfully connected to the day's main event: surfing.

Karena shares:

"I learnt that weather conditions are scrutinised by surfers in advance. Surfers look for low - pressure depressions deep in the Atlantic as this signals the production of wind. Wind blowing across the ocean generates 'swell' – deep water waves. Additional factors contributing to swell are the force due to gravity between the Earth, the moon and to a lesser extent, the sun, as well as the rotation of the Earth on its axis.

As the swell reaches the coastline and shallower depths, the water in contact with the seabed decelerates due to friction, but the water overlying this maintains momentum, pitching it up to form a breaking wave called 'surf'. Favourable wind speed and direction at a local level (preferably 'light offshore') and surface tension also contribute to the production of the well-shaped 'glassy, clean' waves that surfers love. Physical wave properties such as the wave amplitude and period alert surfers to the quality and power of the wave, as well as the time available to the surfer to paddle out beyond the break.

I learnt that a surfboard's smooth underside reduces friction between the surfboard and the water, while the application of wax to the surfboard's deck increases friction between surfer and surfboard thereby increasing grip. Surfing also involves forces like buoyancy (from the water), the normal force (from the surfboard) and lift (from the motion of the surfboard in water) which counteract the combined weight of the surfer and surfboard, while wind and water drag slow a surfer's forward motion, and wave thrust propels the surfer toward shore".

Dry land demonstrations showed how the choice of surfboard, body positioning, and centre-of-mass all played a role in understanding how we move on the waves when surfing. Energy sources and energy conversions together with lines of force were directly linked to movement, muscle engagement, and potential injury points, revealing how deeply physics underpins safety and performance in health and sports science.

Figure 1: Emer O'Connor and Niamh Farrelly with their "foamy surfboards" feeling "stoked" after their surf.

Karena adds "The Physics lecturers conducting the activities were extremely generous with their time, which gave rise to plenty of enjoyable discussion around the concepts of physics, and their connection to real life".

Land-based experiments allowed students to determine the acceleration due to gravity by measuring the speed of shallow water waves as a function of water depth while "Our place on Earth" was considered when the curvature of the Earth was observed by comparing the position of the horizon at different elevations using theodolites. Thermal cameras added another layer of intrigue, allowing students to observe changes in body temperature before and after surfing.

Figure 2. Lucy McLoughlin and Jade O'Loughlin were wowed when they observed for real, the dip in the horizon.

In this way, students could see how the human body acts like a battery, producing energy to heat a thin layer of seawater inside the wetsuit that serves as a warm blanket and combined with the wetsuit, insulates you from the cold outside.

Amanda remarks, "I advised students to be well watered and fed before surfing. The advice hit home when we compared the number of calories in a bowl of porridge to the energy needed to heat 1 kg of cold water by one single degree and the amount of energy our bodies use when surfing. Of course, the real lesson came once they'd finished their surf. Everyone was grateful to restock on calories with a nice lunch and a hot cup of tea and biscuits then!"

And so, with surfboards in hand and wetsuits zipped up, students were soon applying these principles themselves. As they paddled out and tried to balance, stand, and ride the waves, they unknowingly experienced concepts like centre of mass, torque, and inertia. Physics was no longer abstract - it was happening beneath their feet, in every wave, wipe-out, and triumphant ride to shore.

These simple but effective activities stirred interest and discussion, created a space where students felt free to ask questions, reflect on their experiences, and learn collaboratively all the while making Physics concepts feel relevant, real and fun.

Karena remarks "students benefited greatly by having physics reflected in a very practical, exciting and relatable form, changing our impression of physics and motivating and inspiring us to approach physics from a wholly different perspective in future."

In the end, this wasn't just a physics lesson. It was a reimagining of how science can be taught. Many students left the day feeling inspired, motivated, and - perhaps for the first time – more confident in their ability to understand and apply physics to their discipline and other real-world problems. The positive energy extended beyond the group, with social media buzz, an article in the national newspaper and a radio interview with Dr. Amanda Barry helping to spotlight the project and Physics in Health and Sports Science and the real world.

For both students and faculty, it was a powerful reminder that learning can be active, joyful, and deeply memorable - especially when it's outdoors and involves a surfboard and a splash.

Karena Dowling is a first-year Sports Rehabilitation and Athletic Therapy student at SETU, taking Physics for the first time. She is a mature student, teacher of traditional music and sports massage therapist. Passionate about lifelong learning, she is driven to become a more effective therapist—particularly in support of her local hurling club—and aspires to be a steadfast role model for her two children.

Amanda Barry is a retired MPE, SETU Physics Lecturer, Surfer and mother of three. Amanda takes a dynamic approach to education, continually seeking creative ways to teach and learn in Physics. She believes compassion in education - through understanding students' needs and putting this understanding into practice - is essential for helping students reach their full academic and personal potential.

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What I Brought Back from the ESMPE School on Radionuclide Internal Dosimetry in Prague – Beyond Just Clothes!

In addition to my suitcase full of clothes, I returned from the European School for Medical Physics Experts (ESMPE) on Radionuclide Internal Dosimetry in Prague with something far more valuable—knowledge, insights, and inspiration.

This in-person and online hybrid course, held from 13th–15th February 2025 in Prague, Czech Republic, built upon a foundational series of 24 introductory webinars on the principles of radionuclide internal dosimetry. These webinars, initiated by the EFOMP Special Interest Group on Radionuclide Internal Dosimetry (SIG_FRID), remain freely available on YouTube: Radionuclide Internal Dosimetry Webinar Series.

The school drew 113 participants—55 online and 58 in person—from 27 countries. The group was diverse (63 women and 50 men), with an average age of 39 (ranging from 23 to 65 years). Here, four participants share their unique experiences:

Paulo Ferreira – *Champalimaud Foundation, Lisbon, Portugal; online attendee*

Our Nuclear Medicine Service-Lab at the Champalimaud Foundation has been working in the field of internal dosimetry for over a decade. This course proved crucial in helping us assess both our current standing and our future direction in this scientifically demanding discipline.

The balance between theoretical concepts and practical application was excellent, as was the teaching methodology. The open-source software tools introduced during the course were user-friendly, engaging, and highly applicable to our work. The hybrid format was particularly important for those of us unable to travel to Prague.

I now feel significantly more confident in applying dosimetric methods in both clinical and research contexts. The course not only exceeded my expectations, but also allowed me to interact with colleagues from diverse backgrounds and nationalities, all working in this vital area. The experience was so positive that I'm already looking forward to participating in future dosimetry-related events and training.

I wholeheartedly recommend this course to colleagues and early-career professionals interested in internal radionuclide dosimetry.

Hadi Fayad – *Hamad Medical Corporation, Qatar; in-person attendee*

As a Senior Medical Physicist involved in launching theranostic services at Hamad Medical Corporation over the past 18 months—particularly ^{177}Lu-DOTATATE and ^{177}Lu-PSMA therapies—this course came at a perfect time.

It offered a comprehensive grounding in both theory and practice, including MIRD formalism, voxel-based methods, image quantification, and clinical workflows. The hands-on sessions were especially beneficial. With prior experience in SIRT, I appreciated the opportunity to discuss real cases with expert mentors, in a setting that encouraged exchange of opinions and peer learning.

Being onsite enabled valuable face-to-face interactions with professionals from around the world. These informal discussions provided fresh insights into implementation strategies and enriched the overall learning experience.

Since returning, I've begun incorporating key elements of the course into our internal dosimetry planning. Although some logistical hurdles remain, I now feel significantly more prepared to move forward. This course was truly transformative, and I strongly encourage fellow physicists to attend.

Kostopoulos Konstantinos – *KeV Medical Imaging, Athens, Greece; in-person attendee*

My First Step into Clinical Dosimetry – An Experience in Prague

As an application specialist for SPECT/CT and PET/CT systems recently transitioning into dosimetry software, I had no prior formal training in internal dosimetry. Attending the ESMPE School in Prague was the ideal starting point—and it did not disappoint.

Although the school offered a hybrid format, I chose to attend in person. This decision allowed me to meet and learn directly from experts and peers across Europe. The atmosphere was energising, and the opportunity to network and share experiences proved invaluable.

The programme struck a great balance between theory and clinical examples. With my background in biomedical engineering, I found the content both accessible and enlightening. It helped me appreciate how dosimetry fits into the broader goal of personalised nuclear medicine and highlighted its essential role in patient care.

The practical sessions on ^{177}Lu therapies and thyroid dosimetry were particularly impactful. The course gave me clarity and motivation—I've already enrolled in further training. Prague was more than just a learning experience; it marked the beginning of an exciting new chapter in my professional journey.

Joana Vale – *Atrys Portugal, Santa Maria da Feira/Porto, Portugal; online attendee*

Attending the ESMPE School on Radionuclide Internal Dosimetry was a highly enriching and professionally rewarding experience.

With nearly two decades of involvement in radiopharmaceutical therapy, I am acutely aware of the growing complexity of new radionuclides and therapies. Internal dosimetry is a crucial tool in advancing personalised nuclear medicine, and this course offered a comprehensive and up-to-date overview of the field.

The lectures delivered valuable insights into current methodologies and practical clinical applications, especially concerning emerging radiopharmaceutical therapies. I particularly appreciated the emphasis on interdisciplinary collaboration and the open discussions facilitated throughout the course.

The hands-on sessions using open-source software added significant practical value and allowed immediate application of theoretical concepts. Since completing the course, I've initiated the implementation of an internal dosimetry programme at Atrys Portugal—a direct outcome of this training.

This course has been instrumental in furthering our capabilities, and I strongly recommend it to any medical physicist working in therapeutic nuclear medicine.

Let’s just say: what I packed in my suitcase may have been clothes, but what I brought back was knowledge, connection, and renewed inspiration to advance internal dosimetry in my practice.
We would like to thank all participants for their active engagement, making this school a great place to learn and exchange. Special thanks to the local organisers in Prague, Jaroslav Ptáček and Tereza Hanušová, for making this school unforgettable!

Upcoming Conferences and Educational Activities

This list was correct at the time of going to press.
For a complete, up-to-date list, please visit our EVENTS WEB PAGE

Jul 1st, 2025 - Jul 6th, 2025
Frontiers in Medical Physics - International School of Physics "Enrico Fermi"
Varenna, Italy

Jul 1st, 2025 - Jul 3rd, 2025
FLASH Workshop 2025: The Role of Oxygen in FLASH Radiation Therapy
Heidelberg, Germany

Jul 10th, 2025 - Jul 12th, 2025
EFOMP - European School for Medical Physics Experts on Proton Therapy Physics
Prague, Czech Republic

Jul 27th, 2025 - Jul 30th, 2025
AAPM 67th Annual
Washington D.C

Aug 18th, 2025 - Sep 19th, 2025
Hybrid Summer Workshop 2025: Functional Imaging for Diagnostic and Therapy
German Cancer Research Center (DKFZ) / Heidelberg or online only

Sep 1st, 2025 - Sep 5th, 2025
EUTEMPE - Artificial Intelligence in Patient Dosimetry for X-ray Diagnostic and Therapeutic Imaging
Heraklion, Crete, Greece

Sep 8th, 2025 - Sep 19th, 2025
School on Medical Physics for Radiation Therapy: Dosimetry, Treatment Planning and Delivery for Advanced Applications
ICTP, Trieste, Italy

Sep 18th, 2025 - Sep 20th, 2025
EFOMP - European School for Medical Physics Experts on Interventional Radiology Practices
Zagreb, Croatia

Sep 24th, 2025 - Sep 27th, 2025
56th Annual Meeting of the German Society for Medical Physics (DGMP 2025)
Berlin, Germany

Sep 28th, 2025 - Oct 3rd, 2025
Medical physics for image-guided cancer therapy - Bad Honnef Physics School
Bad Honnef, Germany

Sep 29th, 2025 - Oct 4th, 2025
IUPESM World Congress on Medical Physics and Biomedical Engineering 2025
Adelaide, South Australia

Sep 29th, 2025 - Oct 3rd, 2025
9th European Radiation Protection Week
London, UK

Oct 6th, 2025 - Nov 21st, 2025
Hybrid Courses in the Field of Particle Therapy 2025
German Cancer Research Center (DKFZ) / Heidelberg or online only

Oct 8th, 2025 - Oct 11th, 2025
41st Annual Scientific Meeting of the ESMRMB
Marseille, France

Nov 6th, 2025 - Nov 8th, 2025
The 17th International Conference & Workshop "Medical Physics in the Baltic States 2025"
Kaunas, Lithuania

Nov 10th - 14th, 2025
Occupational Dosimetry in Diagnostic and Interventional Radiology (EUTEMPE course)
Personnel dosimetry & competences for MPE with RPE responsibilities
Braunschweig, Germany

Nov 13th, 2025 - Nov 15th, 2025
EFOMP 2nd Symposium on Molecular Radiotherapy Dosimetry: The Future of Theragnostics (SMRD2)
Athens, Greece

Nov 27th, 2025 - Nov 29th, 2025
Data Analysis with Python for Medical Physics
Online

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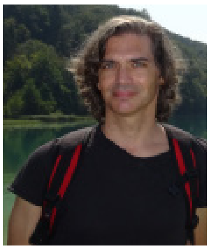

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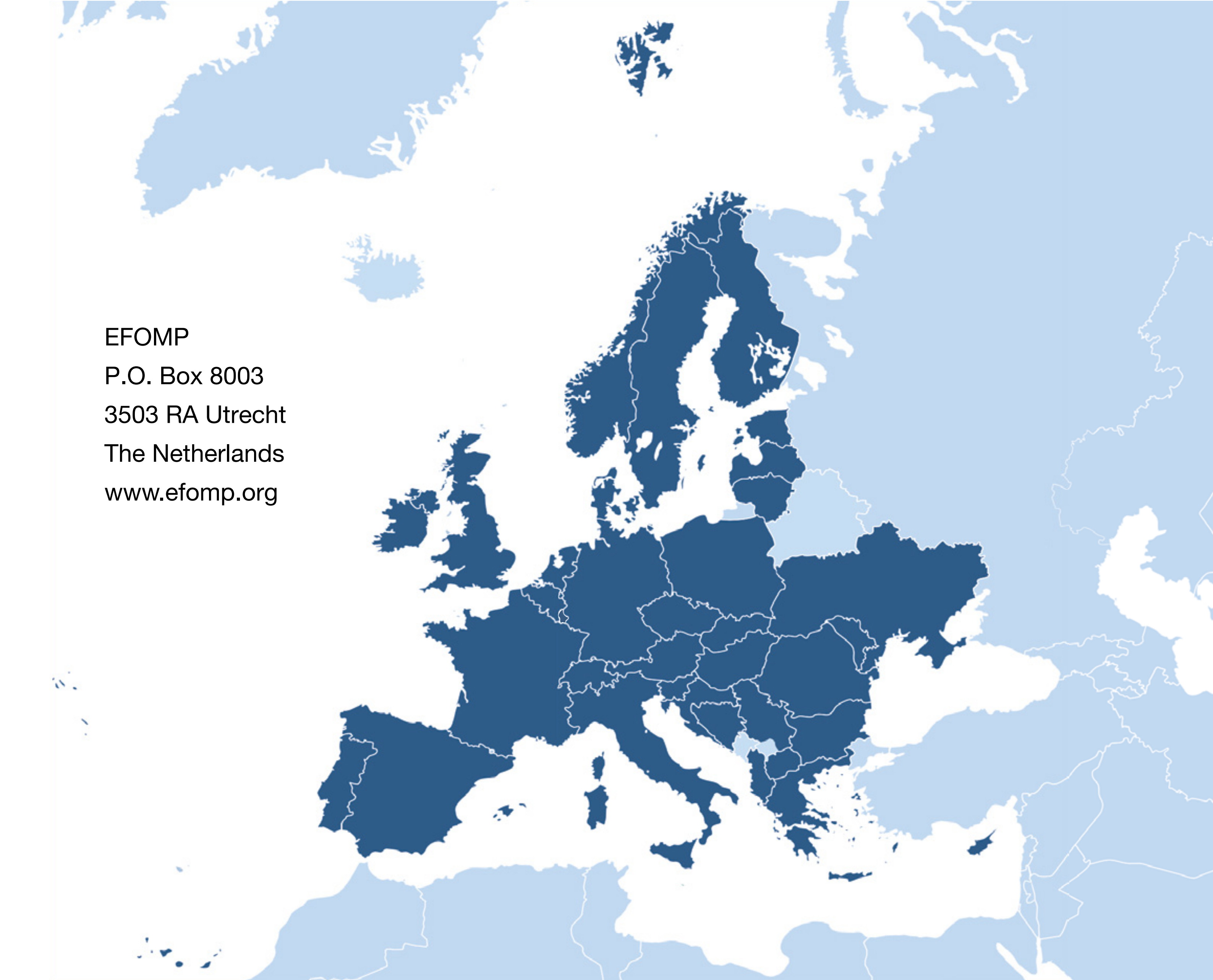

EFOMP
P.O. Box 8003
3503 RA Utrecht
The Netherlands
www.efomp.org

EFOMP

EUROPEAN FEDERATION OF ORGANIZATIONS FOR MEDICAL PHYSICS

The European Federation of Organisations in Medical Physics (EFOMP) was founded in May 1980 in London to serve as an umbrella organisation for medical physics societies in Europe. The current membership covers 37 national organisations which together represent more than 10.000 medical physicists and clinical engineers working in the field of medical physics. The office moved to Utrecht, the Netherlands, in January 2021.

The motto developed and used by EFOMP to underline the important work of medical physics societies in healthcare is “Applying physics to healthcare for the benefit of patients, staff and public”.

For more news and information about EFOMP activities please follow us on social networks or visit our website

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