BULLETIN

September 2025

SGSMP
SSRPM
SSRFM

Schweizerische Gesellschaft für Strahlenbiologie und Medizinische Physik
Société Suisse de Radiobiologie et de Physique Médicale
Società Svizzera di Radiobiologia e di Fisica Medica
Swiss Society of Radiobiology and Medical Physics

No. 112

Contents

BULLETIN 112

September 2025

Cover image:
Altamira Bison, ca. 15000 - 10000 b.C.
pigment on rock, unknown authors
(Cave of Altamira, Spain)

Editorial

Letter from the Editors

Dear colleagues,

We are writing these lines during the last days of August, after a couple of months with their own special pace just like tradition prescribes. Summer is by definition "the" holiday season: patients try to be everywhere but in a hospital and most of the medical staff share the same goal. For those who stay on duty is time to do our QA with less interruptions, try to again revive stalled projects, or tidy up the amount of paper that even in the digital age manages to accumulate on every desk and shelf.

This year the process resulted in the donation to the Editorial team of a collection of printed Bulletins dating back to n. 78 from Dec. 2013. The reading of n. 78 has been fascinating, both in realizing how much has changed since then but also how much has remained part of the society. That issue opened with the President's letter (like this one on page 3), there had been an AMP meeting as we still have twice a year (see the report on page 5), there was a TLD intercomparison (the 2025 results are on page 10) and new working groups were launched (the latest is announced on page 9 of this issue). Puzzles and games had been present on the Bulletin before, just not on n. 78; but we have one on page 24.

In November 2013 new physicists had just recently officially joined the SSRMP or passed the Certification Exam; some of those names are present in this Bulletin as well, this time as speakers, event organizers or Board members. Time flies, indeed, and we're all always moving forward.

If you would like to share with us a relaxing walk down Memory Lane, our website [1] offers you the collection of all issues of the Bulletin starting from n. 47 from April 2002; we invite you to take a look, open a random issue and quickly go through its pages: you won't be disappointed!

We wish you a good start into the Autumn season,

Davide and Marie

[1] https://ssrpm.ch/publications-and-communication/bulletin/

PRESIDENT'S LETTER

Dear colleagues,

I hope you enjoyed the summer. Although we're still enjoying warm and pleasant days, it seems we've passed the peak of the season.

Back at work, I've been discussing updates from the local organizing and scientific committee of the SSRMP Annual Meeting. I was very pleased to see the high number of abstract submissions — in fact, we received more than we can accommodate during this short meeting! A big thank you to all of you who submitted your contributions. I'm really looking forward to hearing what you have to share. To those whose abstracts couldn't be selected due to time constraints: thank you as well. Don't be discouraged — there will be more opportunities next year.

We're excited to announce that the preliminary program is now online, and we look forward to welcoming you to Geneva at CERN. If you haven't registered yet, please remember that the deadline is September 15th. We strongly encourage you to join us and benefit from the insights and presentations of your peers.

Recently, I received some interesting reports from the FOPH (Federal Office of Public Health), which we wanted to share with you, so they are now available in the News section of our website.

The first report is titled "Exposure of the Swiss population to ionising radiation in medical imaging – 2023 update." One key point highlighted is that the number of CT (computed tomography) examinations is increasing, while the average dose per exam is decreasing. This trend reflects the effectiveness of optimization measures taken so far — including the introduction of diagnostic reference levels, protocol optimization by both manufacturers and users, and the integration of medical physicists into daily clinical practice. This last aspect particularly highlights the importance of our work as medical physicists: we are here to help improve quality of care and patient safety.

The second report concerns the medical radiological events. Clearly, the more we learn about incidents — not only in our own institutions but also in others — the better we can prevent similar issues and improve our practices. Sharing such information is a key to continuous improvement.

On May 23 we held the Spring AMP, which was combined with the first Early Careers (EC) event. Just as a reminder, the AMP meetings are a great opportunity to stay updated on the SSRMP's activities, monitor the progress of working groups, and exchange ideas with your colleagues. This spring, Prof. Dr Oscar Matzinger gave a presentation on the upcoming flat rate reimbursement system for radiotherapy, planned for 2026. As this topic is

highly relevant to our field, we later organized an online follow-up meeting with Prof. Dr Daniel Zwahlen for those who couldn't attend the AMP in person. During the AMP meeting we also heard the updates from working groups (WGs). This spring, we heard about room shielding in the kV domain, the role and tasks of medical physicists in imaging, quality control of treatment planning systems (TPS) and artificial intelligence in medical physics. These efforts will certainly help guide and support our members in their daily work.

A new working group has also been launched: "Revision of Guidelines for Obtaining the SSRMP Medical Physics Certification". There is clearly strong interest in this topic, indicating its relevance and need. A warm thank-you to all those involved in these WGs — your work is essential in moving our small community forward.

During the AMP, the kick-off meeting for the Early Careers group was also held. They attended the AMP and organized a dedicated event with two attractive presentations: a refresher on statistics and hypothesis testing, and an introduction to the fundamentals of internal dosimetry. After the talks, they hosted an apéro-networking session, which received very positive feedback. I hope this marks just the beginning of the success of the Early Careers group — best of luck moving forward!

It's not just the working groups contributing — individuals and institutions are also making great efforts. I'd like to express special thanks to IRA for their work on the TLD intercomparison and the report they produced.

I recently participated in the scientific committee meeting for the next Swiss Congress of Radiology. As you know, this is the key national congress for medical imaging professionals — and we, as medical physicists, belong to this community. Our presence is expected and valued. During the 2025 meeting in St. Gallen, I was surprised and pleased to learn that 60% of medical physicists working in imaging in Switzerland attended. Of course, in absolute numbers we are fewer than radiologists or technicians, but we were well represented. Thank you to all who attended or presented — your involvement matters. Our proposals to the scientific committee are always very welcome, so please don't hesitate to submit proposals. From now on, Natalia Saltybaeva will represent us in the SCR scientific committee, so do reach out to her if you have ideas.

I hope you enjoy this edition of the Bulletin. Let me take this opportunity to thank the team responsible for putting together this great issue, as well as those working on the newsletter, website updates, and other communications. These efforts are how we keep our community informed. Thank you to the editorial team — your work is greatly appreciated!

Lastly, a quick reminder: our next in-person meeting will be the SSRMP Annual Meeting. During this, we'll also hold the annual assembly. Although there won't be any elections this year, we will share important and exciting news about our society. It will take place on Wednesday, October 29th, in the main auditorium at CERN in Geneva.

I truly hope to see many of you there.

Until then — enjoy the Bulletin and take care!

Marta Sans Merce
SSRMP President

Annual Assembly: 29.10.2025

- The next annual assembly of the SSRMP will take place on 29th of October during the Annual Meeting.
- Location : Main Auditorium, CERN
- All information, program, inscription: https://indico.cern.ch/event/1513894/

AMP Meeting

Bern, 23rd of May 2025

The first AMP Meeting of this year took place in Bern on 23.05.

A special guest kicked off the meeting: Prof. Dr. Oscar Matzinger, Medical Director of Radiation Therapy at Swiss Medical Network, Professor of Practice at ETH, and Vice President of the Swiss Society of Radiation Therapy (SRO). He provided insights into the new TARDOC/Flat Rate billing system to be implemented in 2026, helping us understand what to expect. It was extremely useful and enlightening to learn that the Flat Rate system that has been imposed on the Radiation Therapy branch is actually not written in stone. In fact, we are entering a transition phase where we have the chance and the responsibility of collecting data (our bread and butter!) for a revision of these Flat Rates.

How does this translate into practice? During this "revision phase" (2026-2028) we will actually be able to fill-in TARDOC positions which then, all summed up, will mostly end up in the same and lowest flat rate, no matter how many positions we fill. Nevertheless, we shall indicate in the TARDOC system each performed task and activity correctly, responsibly and fairly, even when these, for the time being, will give only the exact same flat Flat Rate! These TARDOC positions will be our data, our base on which to build and propose a billing system that better and more fairly reflects our real tasks and daily work. Oscar Matzinger couldn't help repeating how important a homogeneous and fair billing will be during this phase. So, don't be smart trying to outsmart the system and everyone else. In the long run, such attitude won't play in anyone's favor.

Prof. Oscar Matzinger during his presentation of the new TARDOC system

The currently established Flat Rates have unfortunately many substantial problems. Oscar Matzinger listed just a few of them:

- all the pre-RT preparation tasks (planning CT, contouring, treatment planning, QA ...) will all go into the "first RT" forfeit (!!!);
- doctors cannot bill for visits on the same day as a radiotherapy procedure (!!!);
- radiation therapy and chemotherapy might not be billed on the same day (!!!)

and there is more...

Just mentioning these couple of incongruences with respect to how the work in radiation therapy clinic is actually done and what are the actual patients' needs should suffice to motivate anyone to really act responsibly over the next few years. A proposed working group of doctors, physicists and RTT's could participate to analyse and develop an optimal revision proposal together with the SRO tariff commission. As Oscar Matzinger concluded, "The Hand that will rule the world will be One Big Union".

The hand that will rule the world (Wikipedia)

Introducing the Micromort unit: Damien Racine

Following Oscar Matzinger's speech, there came a gust of fresh air with the first talk organized within the frame of the Early Career Group. The talk was given by Damien Racine (IRA, CHUV) and it was about Risk Management. Of course, when one talks about risk in radiation therapy, one cannot avoid explaining the deterministic and stochastic effects that can follow exposure to ionizing radiation. Oh my ... not radiation protection stuff. Again? May I get the certificate and leave the room?

Against all (my) odds, Damien did an excellent job in refreshing the memory on the subject with lively humor and I don't think I can recollect to have had so much fun during a talk about radiation protection before. For instance, he re-interpreted the standard unit for measuring effective dose, namely the Sievert, with the Micromort. If we trust his calculation, each of us has 0.91×10^{-6} chances of dying from an accident today in Switzerland.

From here comes the definition of Micromort: 1 Micromort =10^{-6} deaths today in Switzerland. It was really fun to revisit all probabilities of developing secondary cancers due to exposure to ionizing radiation using this unit instead of the Sievert. Well, it put everything in perspective.

Very interesting was also the second part of the talk. This was about another kind of risk, the Communication Risk. Damien focused in particular on the communication with the patient and mentioned the four rules that are at the base of a good communication with the patient:

1. Say what you know,
2. Say what you don't know,
3. Say what you think,
4. Distinguish well between them.

And the one not listed rule: the patient has the right NOT to know. From this subject arose the discussion whether it should be the doctor or the medical physicist talking with the patient about the risks linked to exposure to ionizing radiation (be it for imaging or therapy). Personally, I think that the final comment of Marta Sans Merce proposed the best equilibrium: both medical physicist and medical doctors shall talk to the patient. We medical physicists can say a lot about the risks, but only the doctor can really speak about the justification of the exam or the therapy and the clinical benefits that can come with undertaking the risk.

To conclude the morning, we heard the reports of some of the working groups active in our society:

- The Role of the MP in X-Rays Imaging
- Revision of the Recommendation for QA of the TPS
- Shielding for kV rooms
- Artificial Intelligence

In particular, the AI group (as well as the Early Career group) will be a working group without a fixed end, so a permanent working group. Therefore, I take the opportunity to remind to everyone that it will never be too late to join these groups. Any contribution and enthusiastic participation will always be welcome.

You can find a list of all the active WG with their leader and contact under this link:
https://ssrpm.ch/the-society/working-groups/

This AMP left me with the impression of having had a very productive and informative morning and I'm looking forward already to the next one in December (even though I'm not particularly looking forward to actually being December).

Francesca Belosi (KSW)

Next AMP Meeting: 5th of December 2025

- The next AMP meeting will take place on December 5th in Bern from 9:30 a.m. to 12:30 p.m.
- Detailed program coming soon!

The Early Careers WG takes off!

Bern, 23rd of May 2025

The Early Careers Working Group (EC WG) was recently launched within SSRPM to support emerging professionals in medical physics, helping bridge the gap between academic training and professional practice. Its mission is to foster interdisciplinary dialogue among professionals from diverse backgrounds through targeted events and initiatives. In close collaboration with other committees, the EC WG is committed to promoting an inclusive and supportive environment for members at all career stages.

The group's kick-off event took place alongside the AMP meeting on May 23rd and featured three engaging presentations on topics of broad interest. The first talk, delivered by Dr. Damien Racine, focused on radiological risk communication and was held as a joint session within the AMP. This captivating and entertaining presentation allowed participants to (re)familiarize themselves with the general concept of risk, explore various communication strategies, and understand how these concepts can be contextualized within radiological protection.
Next, Prof. François Bochud delivered an insightful talk on statistics and hypothesis testing. Through a didactic and interactive approach, attendees reviewed key concepts such as p-values, correlations, and the null hypothesis— by the end, these once daunting topics held far fewer secrets from the audience!
After a refreshing networking break, the final talk of the day was given by Dr. Siria Medici, who introduced the principles of internal dosimetry and biokinetic modelling. The presentation explored a range of practical applications, from radiation protection to nuclear medicine.

We extend our sincere thanks to the speakers for their valuable contributions and to the many attendees whose enthusiastic participation turned this first event into a success. Your positive feedback, sparking interest and lively discussions have truly inspired us to keep advancing the EC WG initiatives. We're excited about what's ahead— stay connected for upcoming events, and we look forward to welcoming you again soon!

On behalf of the Early Careers group,

Dr. Veronika Vitzthum (CHUV)
Dr. Siria Medici (CHUV)

New SSRMP Working Group: Hyperthermia

Chairperson: Adela Ademaj
Radiation Oncology Center Mittelland
Kantonspital Aarau
Start date: April 2025
End date: April 2027

Dear SSRMP members,

We would like to invite you to participate in the newly created working group "Hyperthermia". As part of this group, we aim to harmonize the involvement of medical physicists responsible for hyperthermia treatments across Swiss clinical centers.

The aims of "Hyperthermia" working group are the followings:

- To review current practices and the roles and activities performed by medical physicists for hyperthermia treatments (e.g. superficial hyperthermia, deep regional hyperthermia, and wIRA hyperthermia) in Switzerland
- To facilitate collaboration and communication with the aim of creating a framework to connect centers across Switzerland, enabling medical physicists to share tasks, challenges, and solutions. These insights can be used to propose actions for addressing challenges collectively
- To review and purpose quality assurance guidelines for hyperthermia treatments when used in combination with radiotherapy and/or chemoradiotherapy in Switzerland, aligned with European recommendations and guidelines and to help implement them in the framework of the Swiss Hyperthermia Network (SHN)
- To use the Swiss Hyperthermia Network (SHN) database to ensure thermometry data are recorded in a standardized format, enabling consistent evaluation of quality of hyperthermia and clinical outcomes

Please contact Adela Ademaj (adela.ademaj@ksa.ch) if you would like to participate in this working group.

Results of the TLD Intercomparison for Megavoltage Units 2025

1. Introduction

The Institute of Radiation Physics (IRA) in Lausanne is mandated by the Swiss Society for Radiobiology and Medical Physics (SSRMP) to organize an annual dosimetry intercomparison for the gantry driven linacs. The 2025 intercomparison followed the same procedure and used the same equipment to carry out the measurements as previous years. The aim was also the same i.e. to check the absolute dosimetry. This year also, we focused on static photon and electron beams.

Thirty institutions took part to the 2025 intercomparison with a total of 136 beams checked, including 116 photon beams (52 beams with flattening filter (FF) and 64 flattening filter free beams (FFF)) and 20 electron beams.

Like past audits, the requirement was to check each photon energy used in the institution only once. For example, if two machines are matched, only one machine had to be checked, similarly when two machines are equipped with a 6X beam, only one has to be checked.

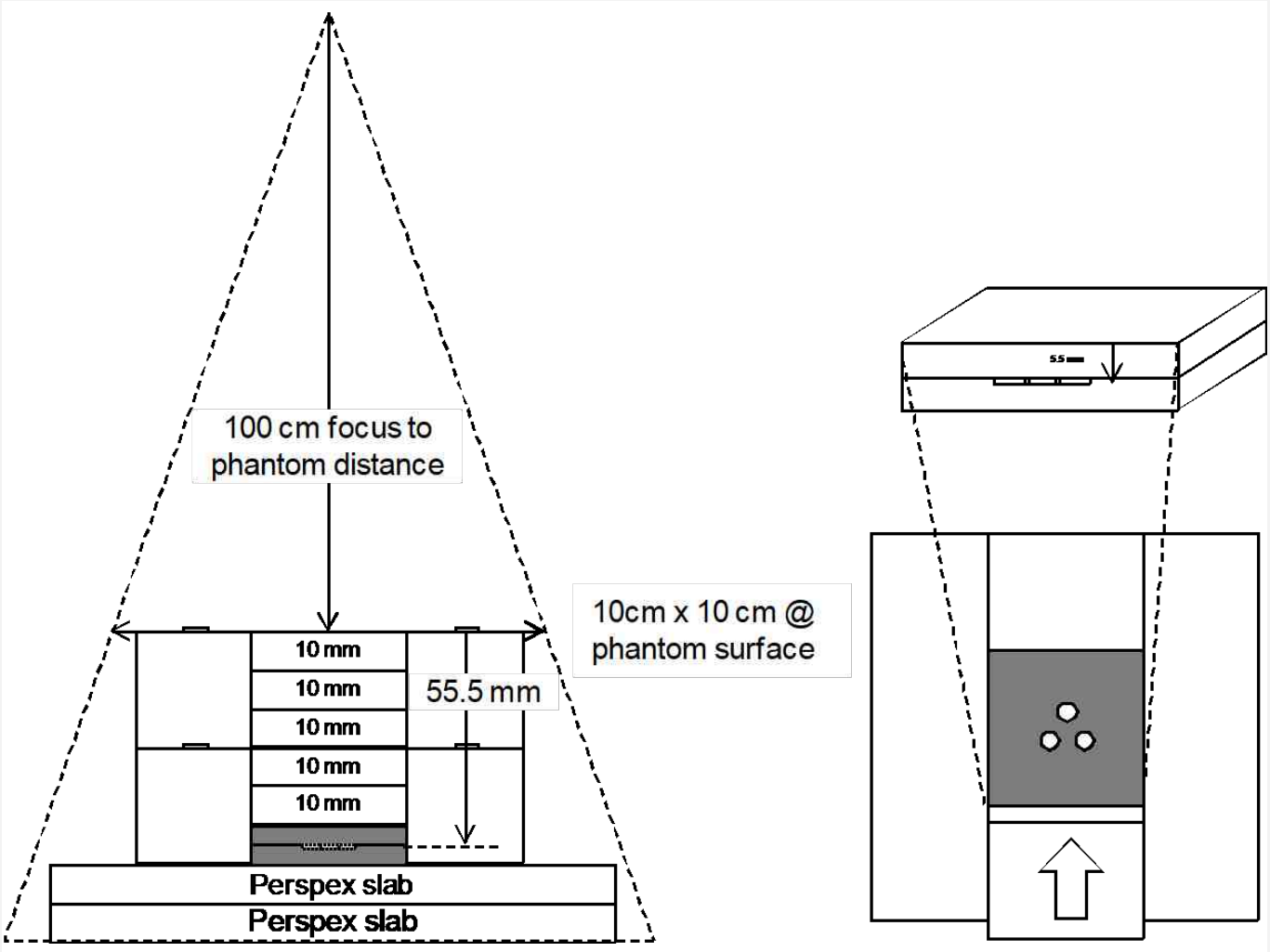


Figure 1. Assembly of the measurement equipment for photon beams: phantom and (closed) phantom frame

2. Material and methods

The same TLD discs (4.5 mm diameter, 0.9 mm thickness, Harshaw Inc.) and solid water phantoms as those for the photon dosimetry intercomparisons of 2011 to 2024 have been used.

For photon beams, the solid phantom was composed of two stacked Perspex phantom frames. The inner square was 4 cm in length, the outer square 10 cm x 10 cm. The frames have been filled with five plain RW3 (PTW Freiburg) slabs, and one slab containing three TLD. The slab dimensions are 40 mm x 40 mm x 10 mm. The measurement depth in solid water was 5.55 cm. The phantom was placed on Perspex or water equivalent material (at minimum 5 cm). This arrangement is shown schematically in Figure 1.

For electron beams, the same material was used. The solid phantom was composed of one or two stacked Perspex phantom frames. The frames have been filled with the plain RW3 slabs and the slab containing the TLD, positioned at the appropriate depth by combining plain slabs of 5 and 10 mm thickness. The phantom was placed on Perspex or water equivalent material (at minimum 5 cm). This arrangement is shown schematically in Figure 2.

Each TLD slab contains 3 TLD chips located on a circle 5 mm away from the center. A correction was applied on the TLD reading to account for the slight difference between solid water and water. For this reason, the user was asked to assume that the phantom was fully water equivalent and provided for sufficient scatter, as it would be the case in a large water phantom.

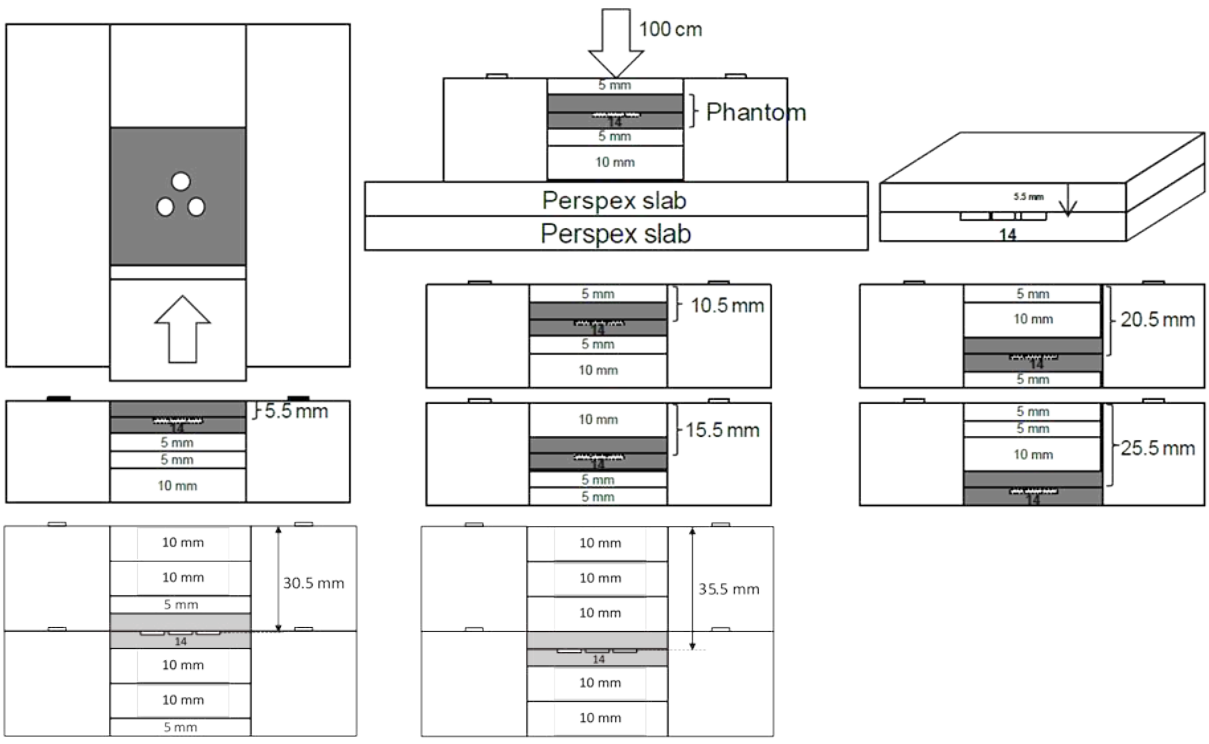


Figure 2. Assembly of the measurement equipment for electron beams: phantom and (closed) phantom frame

A TLD annealing oven and a Harshaw 5500 reader have been used, similarly to earlier intercomparisons. Thanks to the cobalt-60 irradiation facility available at IRA in the calibration laboratory, we could use a less time-consuming procedure insuring the appropriate metrological traceability. In the years 2017-2020, we calibrated the cobalt irradiator in terms of absorbed dose to water for a given radiation quality against the IRA reference dosimeter for photons calibrated at METAS.

In 2021, a direct calibration of the TLD dosimetry system was carried out at METAS for the photon beams. This calibration was used again this year. For electron beams, the same calibration was used as before. This factor is in fact independent of the energy and its value is 1.056±0.008 (relative to Co-60). This allows us to prepare reference TLD at IRA for each series of measurements in the participant's beams.

The absolute dosimetry with TLD requires several corrections: non-linearity of the TLD response with dose, dependence of photon energy and fading effect. The non-linearity and fading corrections have been carefully determined at IRA. The energy dependence of the TLD response is included in the calibration of the cobalt irradiator. The correction associated to the replacement of the water phantom by the solid water phantom is also included in the calibration of the irradiator.

For the intercomparison irradiations, the measurement conditions in the solid phantom were as follows: source to surface distance 100 cm, field size 10 cm x 10 cm at the surface of the phantom, dose to the TLD close to 1.00 Gy.

The participants were expected to provide their own value of dose (stated dose). It had to be specified at the measurement depth for photon beams (5.55 cm), and at the depth of maximum dose for electron beams. The percentage depth dose was also to report. This allowed us to compare the TLD dose value at the measurement depth with the stated dose at the maximum.

Four runs of measurements were necessary for the 30 participants. A calibration of all the TLD was carried out before and after each run, in order to determine precisely the individual sensitivities of all the TLD chips. For each run, a series of 10 TLD ("reference TLD") in each group of 50 TLD were irradiated to the reference dose of 1 Gy at the cobalt irradiator on the irradiation date recommended to the participants. Then these 50 TLD were all read in one batch and the dose delivered to every chip was calculated from the ratio of its indication to the mean indication of the 10 reference TLD. Finally, the corrections mentioned above were applied.

In June 2024, the TLD dosimetry system was audited in the blind and reference irradiation service offered by the IAEA Dosimetry Laboratory (DOL) to Institutions conducting dosimetry audits in radiotherapy.

3. Results

The agreement between the stated dose and the TLD measured dose is evaluated with the ratio "stated/measured" (noted Ds/Dm) and taking into account the TLD measurement accuracy. For photon beams, an agreement within 4% is considered a satisfactory check. For electron beams, the criterion is 6%.

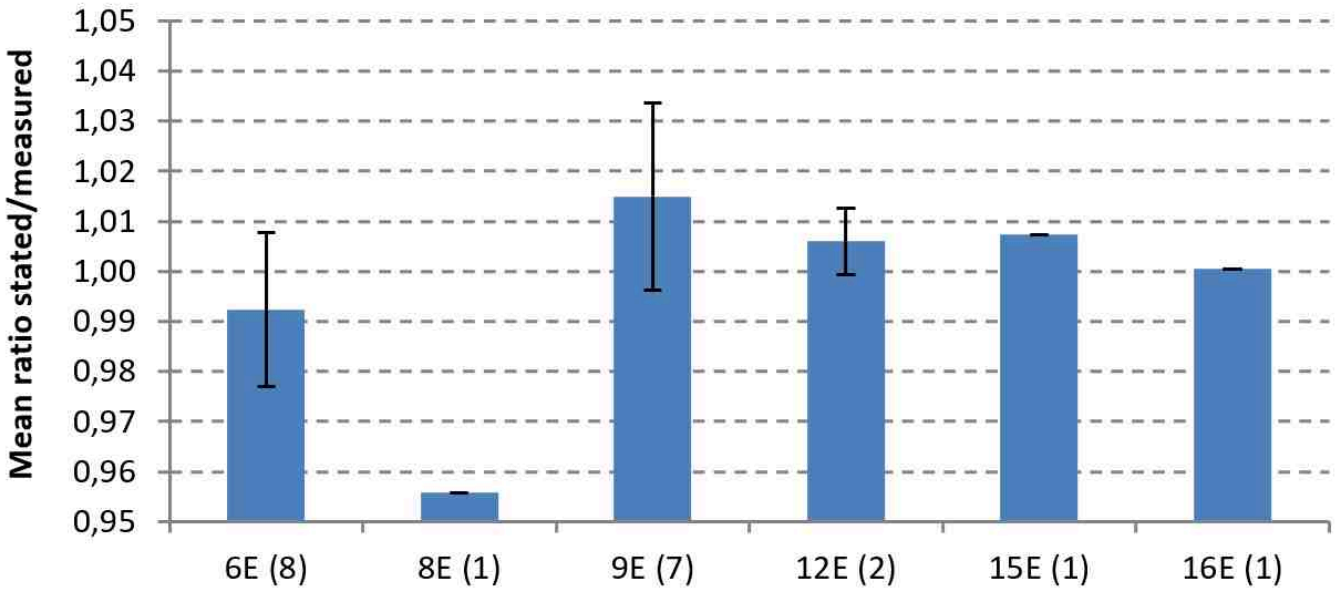


Figure 3: Electron beams: mean Ds/Dm ratio for the different radiation qualities. The number of beams is given in brackets. Error bars=std dev.

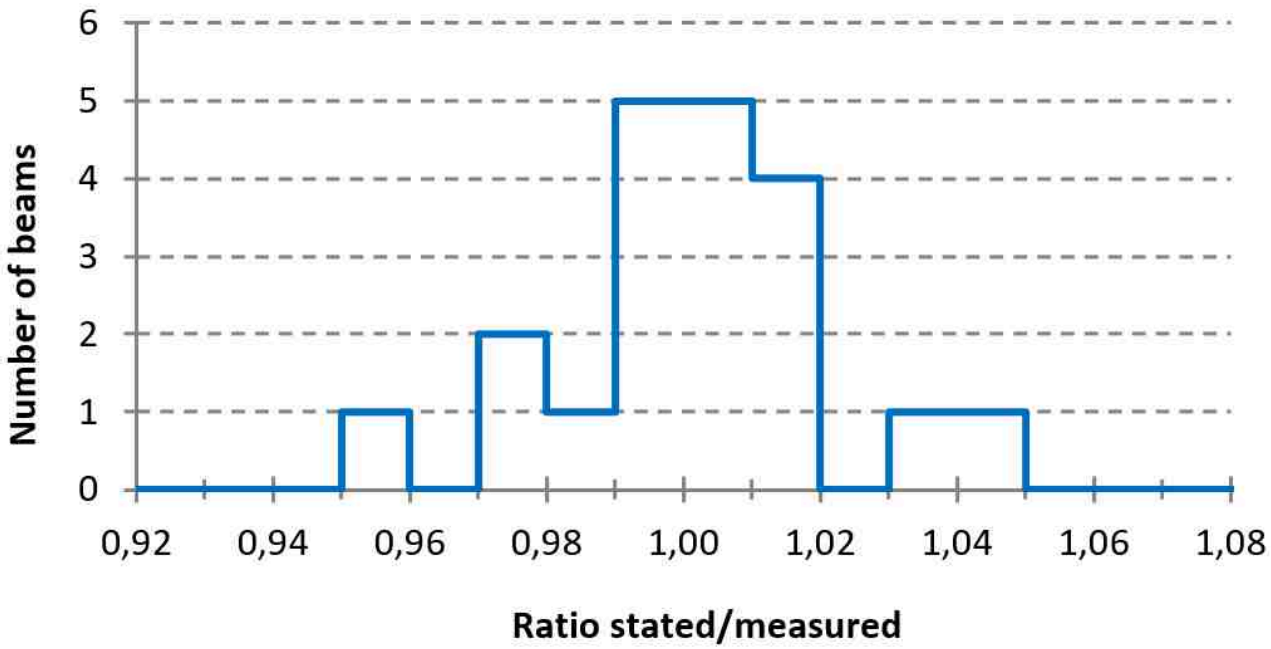


Figure 4: Electron beams: histogram of Ds/Dm ratio for all 20 beams

Parameter	Electron beams
Beam number	20
Mean	1.001
Std dev.	2.0%
Minimum	0.956
Maximum	1.042

Table 1: Electron beams: observed ratio "stated dose/measured dose"

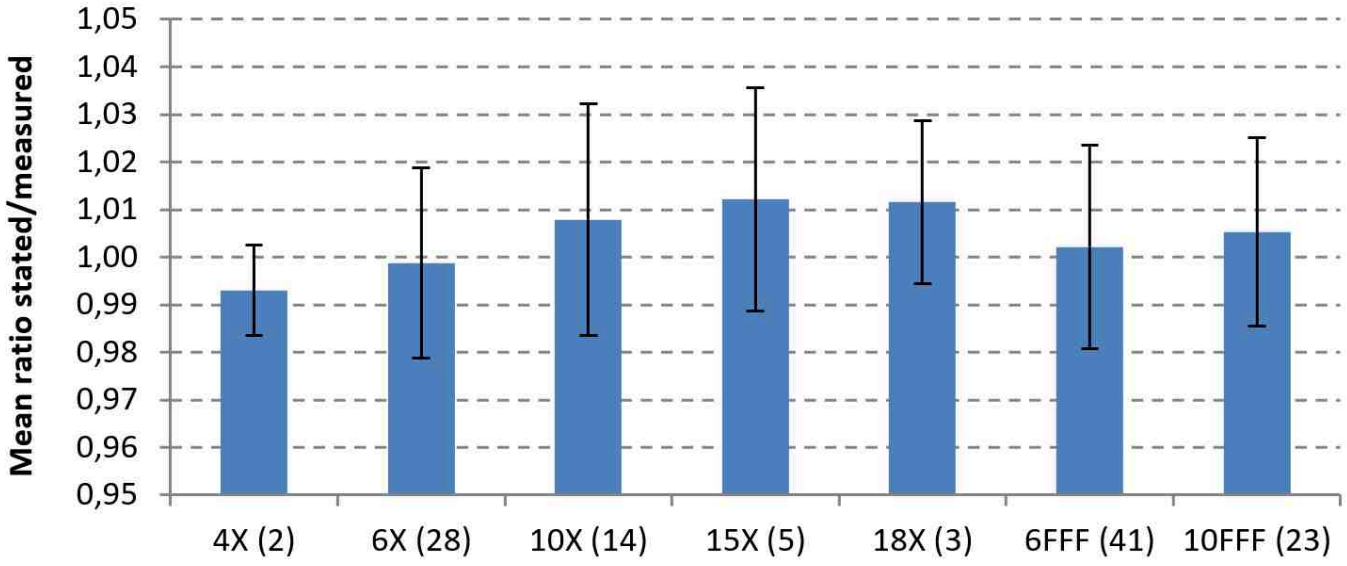


Figure 5: Photon beams: mean Ds/Dm ratio for the different radiation qualities. The number of beams is given in brackets. Error bars=std dev.

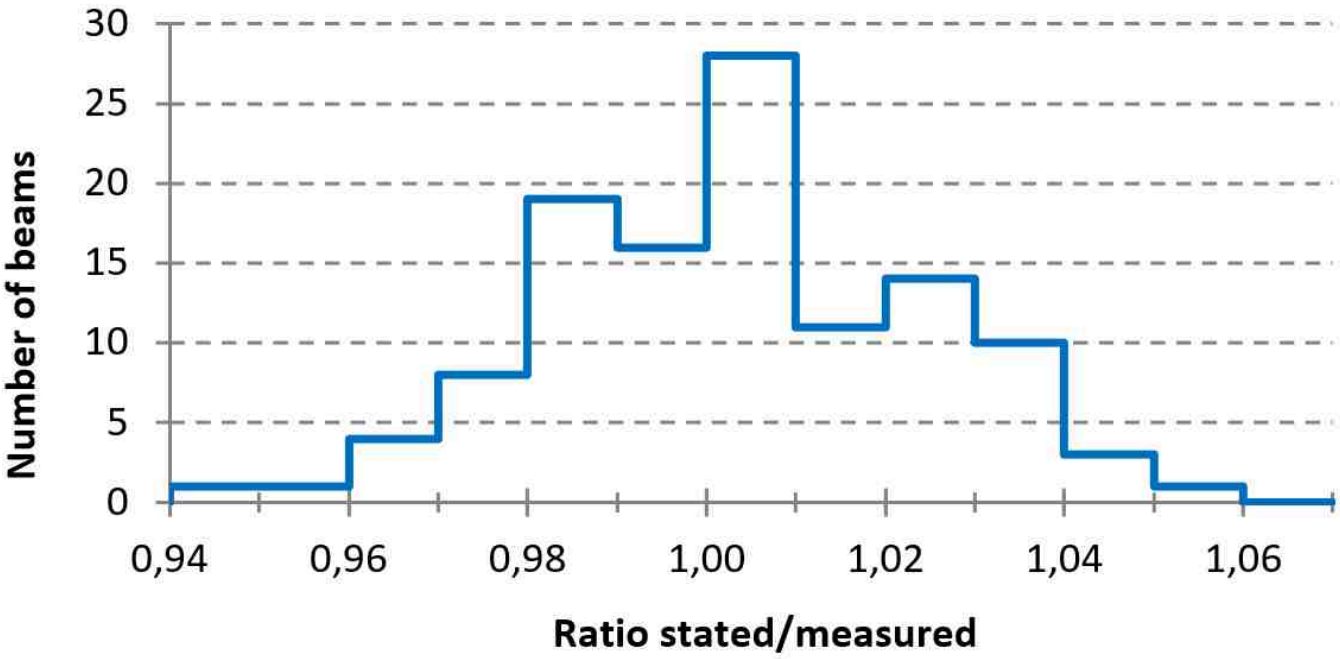


Figure 6: Histogram of Ds/Dm ratio for all 116 photon beams

Parameter	FF beams	FFF beams	Both types
Beam number	52	64	116
Mean	1.003	1.003	1.003
Std dev.	2.1%	2.1%	2.1%
Minimum	0.943	0.962	0.943
Maximum	1.044	1.052	1.052

Table 2: Ratio "stated dose/measured dose" (FF=conventional beams with flattening filter, FFF=flattening filter free beams)

The probability for the Ds/Dm ratio to fall outside of the intervals 0.96-1.04 and 0.94-1.06 only due to the normal fluctuations of the TLD signal is low. Indeed, these fluctuations have been investigated for the uncertainty evaluation and the observed standard deviation was low.

3.1 Electron beams

The mean Ds/Dm ratio for the different beam energies is given in Figure 3. The deviations from the unity are probably due to statistical fluctuations. The distribution of the Ds/Dm ratio for all the electron beams is illustrated in Figure 4. The mean value of Ds/Dm for all electron beams is 1.001. The statistical dispersion is large. No systematic bias between the participants dosimetry and the TLD dosimetry can be concluded, for all the energies and for any particular energy.
100% of the results are in the interval 0.94-1.06, i.e. within ±6%, which is very satisfactory. In addition, 85% of the results are in the interval 0.97-1.03, i.e. within ±3%.

3.2 Photon beams

We checked 52 conventional beams with flattening filter (FF) and 64 flattening filter free beams (FFF). The mean ratio for the different beam types and energies is given in Figure 5 with the standard deviation. This repartition seems to show that all deviations from the unity can be attributed to statistical fluctuations. The distribution of the Ds/Dm ratio for all the photon beams is illustrated in Figure 6. The statistics of the Ds/Dm ratio for all the photon beams are given in Table 2. The mean value of Ds/Dm for all photon beams is 1.003. No significant bias is observed between the participants dosimetry and the TLD dosimetry. No difference between is observed between the mean values of Ds/Dm for FF beams and FFF beams (1.003 for both).

For 95% of the tested beams, the Ds/Dm value is in the interval 0.96-1.04, i.e. within 4%, which is judged satisfactory. More, 64% of the results are in the interval 0.98-1.02, i.e. within 2%. The four centers with beams for which the deviation was slightly above 4% received a recommendation to check the reference dosimetry and the stated dose.

Uncertainties

The uncertainty on the dose measured using TLD includes the contributions due to positioning of the phantom in the beam, reading procedure of TLD with all influence quantities and reference in absorbed dose traceable to METAS for the cobalt irradiator at IRA. The uncertainty budget is given in Table 3. The contribution coming from the procedure with reference TLD and measurement TLD was determined using a statistical method. The fluctuations of the ratio of three measurement TLD over ten reference TLD were analyzed for five irradiations of 300 TLD.

The combined standard uncertainty is obtained by quadratic summation. For photons, it amounts to 1.23% for each measurement with 1 slab containing three TLD, and 1.16% for the mean of 2 such measurements. For the expanded uncertainty we adopted only one figure of 2.5% (k=2) for simplicity. Similarly, for electrons, the expanded uncertainty (k=2) is 4%.

Contribution	comment	Photons std unc.	Electrons std unc.
Positioning	± 1 mm	0.2%	0.2%
Cobalt irradiator calibration	-	1.05%	1.5%
Energy response of TLD	-	0.1%	1.0%
Stat. fluctuations of meas.TLD/ref.TLD	type A eval.	0.6%	0.6%
Non-linearity	all doses 1 Gy	0.05%	0.05%
Fading	t < 3 days	0.10%	0.10%

Table 3: Uncertainty budget for the absorbed dose measurement with TLD. The contributions are given at the level of one standard uncertainty.

Dosimetry protocol

All participants carried out the reference dosimetry using the SSRMP recommendations No. 8 and No. 10, or the IAEA TRS-398 protocol, apart from the CyberKnife (TRS-483), the Radixact and a linac dedicated to total body irradiation.

Reference dosimetry for FFF beams

The participants were asked if they corrected the dosimeter value for the effect of volume averaging during the reference dosimetry at the beam commissioning. According to IAEA TRS-483 protocol, the corrections to apply for FFF beams include in fact two contributions: the correction factor for the difference in water to air stopping-power ratio and the volume averaging correction factor. Eight participants applied such corrections for a conventional linac and for a PTW 30013 chamber. The reported first correction factor amounts to 0.999 for 6XFFF and to 0.997 for 10XFFF beams, and the second one amounts to 1.002 and 1.004 (mean values). One can see that these two corrections almost cancel out.
For a CyberKnife, two participants reported correction factors (mean value 1.009).

4. Discussion and conclusion

During the 2025 TLD dosimetry intercomparison, the dosimetry of 136 photon and electron beams has been checked.

For photon beams, 95% of the tested beams were within ±4% of the TLD dose and 64% were within ±2%. Only five beams out of 116 did not meet the satisfactory criterion of ±4%. In these cases, it was recommended that the dosimetry be verified with the reference dosimeter.
For the 20 electron beams, all of them were within the criterion of ±6% and 85% were within ±3%.

We thank all the medical physicists for their participation and for their excellent collaboration.

28.07.2025

Thierry Buchillier and Claude Bailat
CHUV - Institut de radiophysique (IRA)
Rue du Grand-Pré 1
1007 Lausanne

Winter School in Medical Physics

Pichl, 2nd - 7th of March and 9th - 14th of March 2025

The 36th edition of the long-standing, tri-national "Winterschule Pichl für Medizinische Physik" brought participants from Austria, Germany, and Switzerland back to the picturesque Ennstal region near Schladming. This year, low temperatures preserved some of the snow on the slopes, much to the delight of ski enthusiasts among the attendees. Alongside the wintery setting, the program once again impressed with three excellently curated courses. Thanks to the dedication of the course chairs and the contributions of renowned speakers, the event offered a rich blend of professional development and networking in an inspiring alpine atmosphere.

Course 1: Radiation therapy – focus stereotactic treatments

The first Winterschule Pichl course in 2025 "Strahlentherapie mit Fokus Stereotaxie" focused, as the name suggests, on stereotactic treatments in both the body and the brain. Dr. rer. nat. Daniela Schmitt, this year's course director, compiled a week of medical physics lectures covering different aspects of stereotactic quality assurance, dosimetry and treatment planning, as well as interesting discussions about contemporary challenges in stereotactic radiotherapy and the questions which still need to be addressed.

Bird's eye view over Ennstal and its surrounding mountains

The speakers came from different hospitals across three countries (Germany, Austria and Switzerland) with different approaches and a variety of treatment machines capable of delivering stereotactic treatments. This gave the audience a broad perspective of the available techniques and generated fruitful discussions in a friendly, yet knowledgeable, forum.
Additionally, during the coffee breaks, small groups of users exchanged their experiences and the advantages and disadvantages of different stereotactic tools. In our opinion, this is part of what makes the Winterschule in Pichl so valuable and unique.

The need to harmonise the criteria for contouring, prescribing and recording dose in stereotactic treatments was emphasised by various speakers, which demonstrated that there is still room for improvement. Recommendations from organizations such as the AAPM, IPEM, ESTRO, ICRU, DGMP were highlighted as a reminder of the importance of consistently recording quality data in studies and trials, to ensure accurate collection and reporting of efficacy and related toxicities.

It was a general understanding that quality assurance is necessary in clinical practice, and most of the presenters insisted on the need to implement regular QA programmes that comprise motion management. According to the different studies presented, as well as from discussions with other course participants, it seems that quality assurance testing of moving targets is still scarce.

Other areas, such as on-line and off-line adaptation with their advantages and disadvantages, challenges including the treatment planning accuracy of moving organs in areas of very different densities (e.g. lungs), rigid versus deformable registration, dose summation of different treatment courses (BED and or EQD2 based), stereotactic re-irradiation, were part of the fascinating programme and discussions.

Last but not least, the Winter School at Pichl offered an unbeatable location in the Austrian Alps. There were usually four lectures in the morning before a four-hour break prior to the last three lectures of the day. The midday pause allowed the participants, as well as the presenters, to finish the morning's discussions, to enjoy hiking in the mountains, skiing / cross-country skiing, or just to relax in the hotel's wellness area before setting our brains back in stereotactic mode. If this wasn't tempting enough, dinner was the real extracurricular highlight. It was not only a great opportunity to network and exchange impressions with other colleagues, but also to enjoy a delicious 6 course dinner (!!). Consequently, most of us brought a couple of extra kilos home after the week in Pichl...
Many thanks to the course organisers for the obvious time and effort they invested in the course!
Goodbye for now Pichl Winterschule. We look forward to returning for the next course sometime soon!

Sara Alonso Arrizabalaga & Roger Hälg
Kantonsspital Aarau (KSA)

During the second week of the Winter School, two courses ran concurrently: one focused on statistics and epidemiology, the other offering a hands-on course on artificial intelligence in medical image processing. Each took place in its own dedicated course room, allowing both tracks to proceed in parallel.

Course 2: Biostatistics and Epidemiology

This year's course with mathematical content on the topic of 'Biostatistics and Epidemiology' was aimed at medical physicists from all professions. The audience came from the fields of radiation physics, audiology and imaging and was working in clinics, companies and public authorities. It was a follow-up event on the topic of statistics relating to epidemiology, which has been brought into focus by the coronavirus pandemic.

Prof. Heiko Becher from the University of Heidelberg had once again travelled to the event with most of his established team. The other speakers came from Charite Berlin, and Universities of Vienna and Freiburg. It was noticeable that all the speakers have known and appreciated each other for many years. This was particularly evident in the fact that the different presentations were well coordinated and the 'common thread' of knowledge transfer was clearly recognisable.

Full house in the "Dachstein" course room during the stereotaxy course

The first two days were used to determine the current status of topics such as descriptive statistics and epidemiology, sensitivity and specificity, testing and estimation or case number planning. Content from the 2022 course was also repeated here in order to create a common basis for more in-depth topics. These lectures were given in particular by the Berlin speakers Dr. Dörte Huscher, PD Ulrike Grittner and Dr. Annette Aigner. This was the basis for then delving deeper into logistic regression and descriptive, predictive and causal issues with Prof Georg Heinze.

An intellectual highlight was the Tuesday evening, which the two courses present spent together. The topic of a challenging quiz was 'Sex and Drugs and Rock'n Roll' and went deep into general knowledge. It entertainingly explored the fields of music, medicine vs. Pokemon and evolutionary biology. This evening once again brought the spirit of the winter school to light - the joint interdisciplinary scientific curiosity.

Prof. Willi Sauerbrei has dedicated himself to improving the quality of statistics in the context of scientific studies and brought this idea with him to Pichl as his central message. He then challenged the course participants with his excursus on reporting guidelines for more responsibility and awareness for a comprehensible presentation

Mystic nighttime atmosphere nearby the course location

of the statistical processing of measurement results. A very topical aspect of modern statistical methods as a supplement to classical statistics using machine learning was presented by Matthias Becher using an instructive example.

Prof. Heiko Becher once again managed to bring outstanding speakers to Pichl for a winter school course. During the event, many of the course participants' questions were clarified in in-depth discussions and a lot of new ideas were taken home with them.

Looking back, it can be said that the statistical excursion in Pichl once again impressively expressed the idea of interdisciplinary cooperation. The participants were very impressed by the presentation of well-established statistical methods as well as by the insights into modern aspects and further developments in the field.

Matthias Hey
Kuratorium der Winterschule

Course 3: Artifical Intelligence in Medical Imaging

The Artifical Intelligence in Medical Imaging course week for medical physicists premiered this year in more ways than one. The course registrations already showed in advance that this topic is at the top of the list for further training courses - and across all countries. The interest has proved the “Kuratorium” right: the complex topic of AI is increasingly becoming an integral part of medicine. New ground was also broken with regard to the examination tasks: this year, for the first time in the history of the Winter School, complex practical tasks were assessed during the week, and the classic list of questions was dropped...

The program from course director Wolfgang Birkfellner from Vienna was tactically a hammer in the truest sense of the word. The course started on Monday with a light meal - an introduction to the methods of statistics for AI. This was followed by the first highlight, namely an introduction to machine learning and Python. This demonstrated Birkfellner's excellent way of conveying the complex topic in the most exciting way possible. It was also interesting to see how Koll. Kaiser drew the exciting line to applications in nuclear medicine.
On Tuesday, we delved deeper into the topic of machine learning, excellently presented by Birkfellner. Coll. Langs provided an exciting outlook into the practice of radiology topics. The day ended with an insight into how machines really learn. Exciting!
On Wednesday, Coll. Dorffner from Vienna discussed the applications of AI in medical physics, as well as the special applications in radiotherapy. The topics of PyDICOM and PyRadiomics provided pure excitement before the day ended with a wonderfully relaxed and communicative social evening.
On the penultimate day, the combination of Birkfellner and Hummel shone with the practical topic of AI user interfaces. This was followed by an application example from Coll. Sundar, AI for Segmentation in Nuclear Medicine. In the afternoon, there was another innovation in the winter school: the course leaders changed rooms and so the AI course was given an overview lecture on statistics and epidemiology by Coll.
On the last day, the exercises were finally discussed and then the role of AI tools in medical physics was discussed. This was also the end of a perfect training week! The white flag was raised, as all participants had passed the exam. Congratulations at this point from the Board of Trustees of the Winter School.

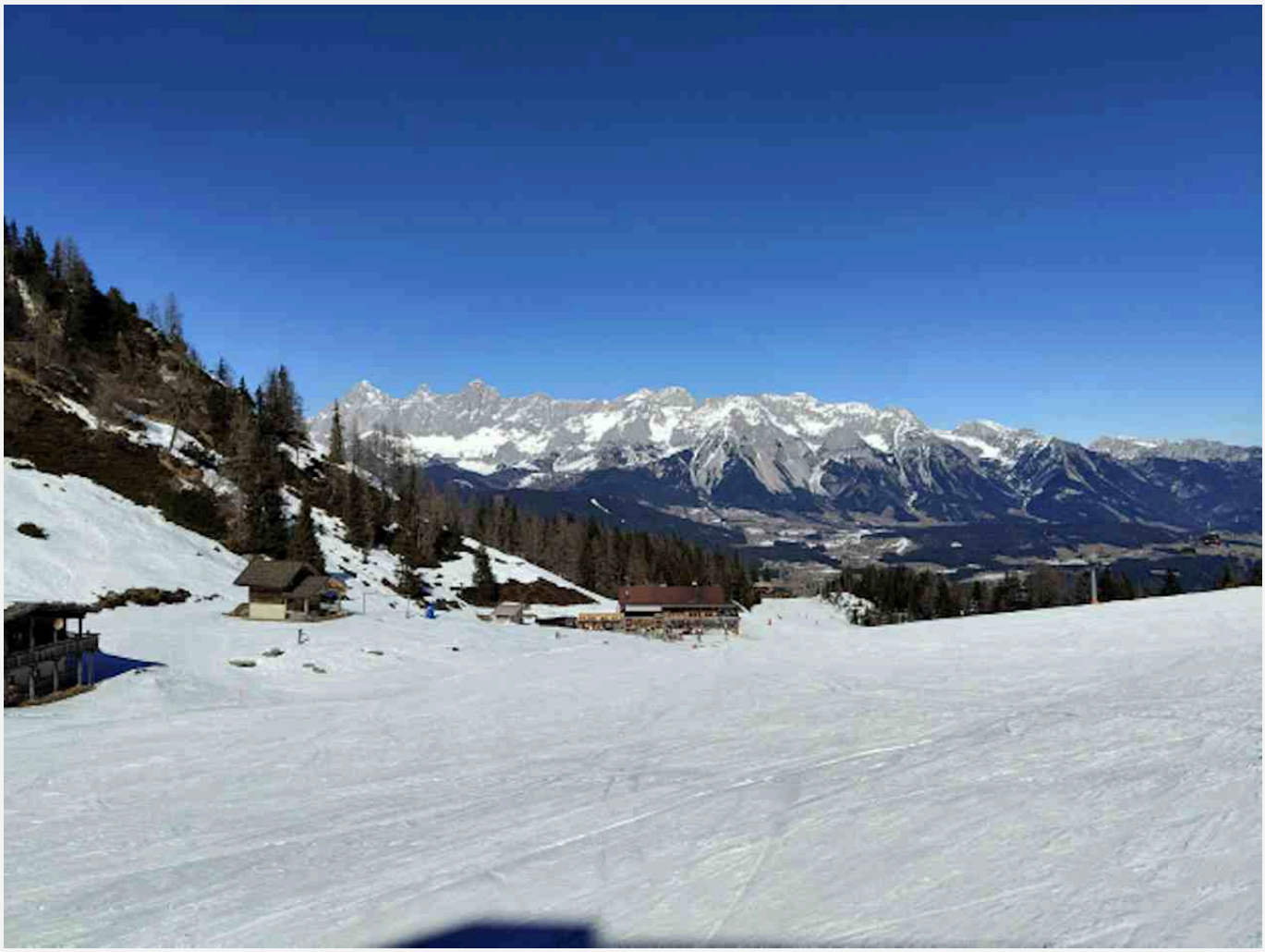
It was an entertaining and interesting week for both newcomers and experts in this specialized subject, which was also extremely exciting and challenging for the lecturers due to interesting questions from the course participants.

Andreas Stemberger
Kuratorium der Winterschule

What sets the Winter School apart is not only the high quality of its educational content, but also its role in fostering valuable professional connections. Engaging discussions during sessions, informal exchanges over coffee, and shared dinners with peers, speakers, and industry representatives all contribute to the event's unique atmosphere – one that is widely valued and enjoyed by everyone involved.

Winter School in Medical Physics will be back in 2026!

The Winterschule Pichl 2026 will take place in the two weeks of 8-13.3 and 15-20.3.2026. There will be a radiation therapy course with a focus on radiation biology, an audiology course and a course on CT and intervention.
Registration for the courses will open in September 2025 - stay tuned at www.winterschule-pichl.de.
On behalf of the "Kuratorium" – Reto Küng, Inselspital Bern



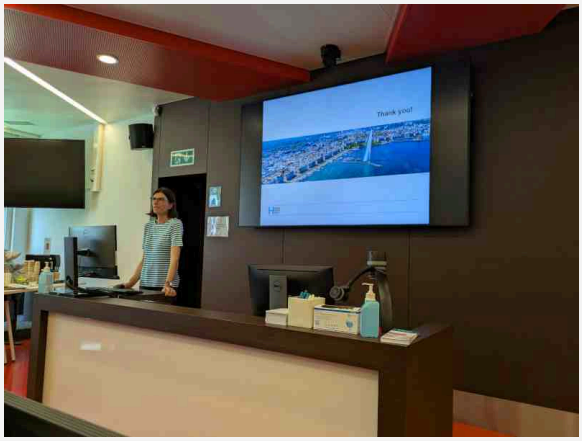
Active recovery during break time by skiing on the nearby slopes

French-speaking physicists meeting

Lausanne, 23rd of June 2025

The first meeting of the year for physicists in French-speaking Switzerland took place on June 23, 2025. We were warmly welcomed at the Clinique de La Source by Diego Gaudino and Christian Tata Zafiarifety. The afternoon offered the opportunity to exchange on a wide range of topics.

Anaïs Viry presented her ongoing work on iodine quantification in images acquired with Dual Energy CT. In her initial measurements, she encountered the unexpected finding that using phantoms other than those recommended by the manufacturer resulted in negative iodine concentrations. These algorithms, which operate very much like black boxes, make it difficult to form a clear assessment.



Amandine Halley

Amandine Halley then presented studies carried out to develop an MRI simulation workflow for the treatment of intracranial lesions in radiotherapy. While this approach eliminates uncertainties related to MRI–CT registration, it requires thorough validation and careful case selection.

The focus then shifted as Nick Ryckx shared his experience of coming across a piece of radiological equipment I had never heard of before: a smoke detector containing a radioactive source. It was a reminder that medical physicists sometimes become historical investigators. How fortunate we are to have such a diverse profession!

Following this refreshing interlude, the program returned to radiotherapy. Two presentations concluded the afternoon: I presented an ongoing study on the full automation and sequencing of contouring and treatment planning, and Christian Tata summarized his work on the acceptance and commissioning of the Aquilion CT scanner.

Nick Ryckx

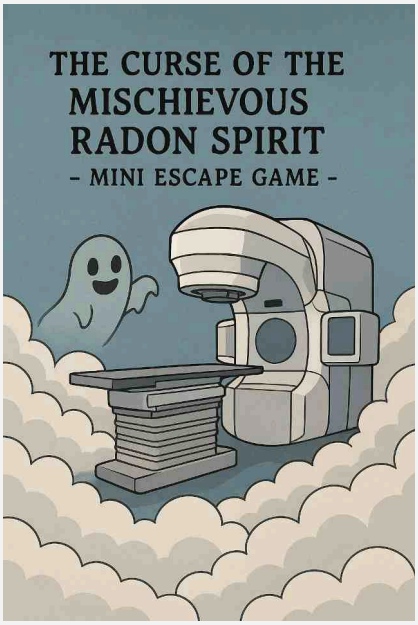
Many thanks to Diego and Christian for their warm hospitality and for organizing this day.

The next meeting will take place at the HUG, with further details to follow. I strongly encourage you to take an active part in this exchange platform. Far from the formal framework of a conference, it fosters open discussion and the sharing of experiences, advice, and ideas.

Looking forward to meeting you all soon in Geneva!
Marie Fargier-Voiron (Clinique de Genolier)

The Curse of the Mischievous Radon Spirit
Mini Escape Game

You arrive early in the morning at the hospital's physics department, only to discover a mysterious note stuck to the control console:
"Greetings, noble physicist! I, the Radon Spirit, have taken control of your imaging devices. If you wish to restore them, you must solve the six riddles below… or forever perform QA in the dark…" Ready? Let the escape begin.



The first device you try to turn on is the linear accelerator, but the control panel flashes: "What is the typical kinetic energy of electrons used for therapeutic photon production?"
(E) 0.1 MeV (A) 6–20 MeV (B) 200–500 MeV

The CT scanner is emitting strange beeps. A new message appears: "Only those who know my attenuation secrets may scan!"
What is the approximate linear attenuation coefficient (μ) of water at 511 keV?
(C) 0.002 cm^{-1} (D) 0.1 cm^{-1} (F) 2.0 cm^{-1}

You open the PET room, but the doors are locked by a glowing keypad. The Radon Spirit asks: "How long must one wait for ^{18}F to decay to one quarter of its initial activity?"
(O) ~110 min (U) ~220 min (Y) ~330 min

A mischievous laugh echoes in the MRI suite. A panel lights up: "Which magnetic field strength is typically used for clinical MRI?"
(Q) 0.1 T (R) 1.5 – 3.0 T (S) 9.4 T

You enter the dose calibration lab and find your ionization chamber trapped inside a beam of green light. A spectral voice intones: "Only those who truly master dosimetry may continue. Which quantity must be known to determine the absorbed-dose-to-water calibration factor ND,w of an ionisation chamber in a reference photon beam?"
(M) The chamber's air-kerma calibration factor NK (traceable to a standards laboratory)
(L) The chamber wall thickness (in mm)
(N) The alignment of the moon with the constellation Ursa Major at the time of METAS calibration

The final room contains a treatment planning workstation covered in ectoplasmic slime. A message appears on the screen: "What is the recommended dose rate for brachytherapy with ^{192}Ir (HDR)?"
(H) 0.4 – 2 Gy/h (J) 2 – 12 Gy/h (I) > 12 Gy/h

Solve all six correctly and collect the six letters. If you succesfully rearrange them, then I'm disintegrated and the devices will return to your control!
Fail… and the Radon Spirit will add you to its collection of lost physicists forever… Good luck!

Solution of the game of the January Bulletin: RADIONUCLIDE

Editorial staff and Information

Impressum

Bulletin editors

bulletin@ssrmp.ch

Davide Cester
Inst. für Diagn. und Int. Radiologie
UniversitätsSpital Zürich (USZ)
Rämistrasse 100
8091 Zürich

Marie Fargier-Voiron
Clinique de Genolier
Route du Muids 3
1272 Genolier

Website editors

webmaster@ssrmp.ch

Anisoara Socoliuc Toquant
Radformation
Clinical Success Manager - EMEA
Lausanne, Switzerland

Lotte Wilke
Klinik für Radio-Onkologie
UniversitätsSpital Zürich (USZ)
Rämistrasse 100
8091 Zürich

Head editor

yvonne.kaeser@physmed.ch

Yvonne Käser
PhysMed Consulting GmbH
Kleindorfstrasse 12a
8707 Uetikon a. S.
079 453 99 02

SSRMP Secretary

secretary@ssrmp.ch

Véronique Vallet
Institut de Radiophysique
Rue du Grand-Pré
1007 Lausanne

Publisher

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Of desirability are all contributions that could be of interest to members of our society, such as

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- Reports on the work of various committees and commissions
- Succinct results of surveys, comparative measurements etc.
- Short portraits of individual institutions (E.g. apparatus equipment, priorities of work, etc.)
- Reports on national and international recommendations
- Short Press Releases
- Photos
- Cartoons & caricatures
- Announcement of publications (E.g. books, magazines)
- Announcement of all kinds of events (E.g. conferences, seminars, etc.)
- Short articles worth reading from newspapers or magazines (if possible in the original)
- Member updates (E.g. appointments, change of jobs, etc.)

The easiest way to send your document is as DOCX or ODT document via email to **bulletin@ssrmp.ch**.

Deadline for submissions to Bulletin No. 113 (Jan 2026): 12.12.2025

SSRMP Board

Board members

PhD	**Marta Sans Merce** President president@ssrmp.ch	Hôpitaux Universitaires de Genève Département diagnostique Rue Gabrielle-Perret-Gentil 4 1205 Genève	079 553 35 06
PhD	**Silvan Müller** Vice President vice-president@ssrmp.ch	Abteilung für Medizinische Strahlenphysik Inselspital - Universität Bern Freiburgstrasse 3010 Bern	031 632 40 48
PhD	**Véronique Vallet** Secretary secretary@ssrmp.ch	Institut de Radiophysique Rue du Grand-Pré 1007 Lausanne	061 328 73 14 079 556 02 08
MSc.	**Regina Seiler** Treasurer treasurer@ssrmp.ch	Radio-Onkologie Luzerner Kantonsspital Spitalstrasse 6000 Luzern 16	041 205 58 07 041 205 58 11
PhD	**Thiago VM Lima** Chair Educational Affairs chair.education@ssrmp.ch	Radiologie und Nuklearmedzin, Luzerner Kantonsspital, Spitalstrasse 16 6000 Luzern	041 205 63 78
MSc.	**Yvonne Käser** Chair Professional Affairs chair.professional.affairs@ssrmp.ch	PhysMed Consulting GmbH Kleindorfstrasse 12a 8707 Uetikon a. S.	079 453 99 02
PhD	**Maud Jaccard** Chair Scientific Affairs chair.science@ssrmp.ch	Clinique de Genolier, Route du Muids 3, 1272 Genolier Clinique Générale-Beaulieu Chemin de Beau-Soleil 20 , 1206 Genève	079 207 49 72
PhD	**Margherita Casiraghi** margherita.casiraghi@eoc.ch	Servizio di Fisica Medica, Istituto Imaging della Svizzera Italiana Ente Ospedaliero Cantonale 6500 Bellinzona	091 811 85 30
MSc.	**Francesca Belosi** francesca.belosi@ksw.ch	Klinik für Radioonkologie Kantonsspital Winterthur 8401 Winterthur	052 266 37 93
PhD	**Jérôme Krayenbühl** jerome.krayenbuehl@usz.ch	Klinik für Radio-Onkologie Universitätsspital Zürich Rämistrasse 100 8091 Zürich	044 255 32 49
PhD	**Siria Medici** Early Careers Group siria.medici@chuv.ch	Institut de Radiophysique Rue du Grand-Pré 1007 Lausanne	079 556 90 37
Dr. med.	**Markus Notter** markus.notter@lindenhofgruppe.ch	Radioonkologie Lindenhofspital Bremgartenstr. 117 3001 Bern	031 300 95 11

Event Calendar

Oct 07 Abu Dhabi, UAE	ICRP Symposium on the System of Radiological Protection Oct 07 - 09 https://icrp.org/page.asp?id=659
Oct 29 **Geneve**	SSRMP Congress and Annual Assembly Oct 29 - 30 https://indico.cern.ch/event/1513894/overview
Nov 30 Chicago, USA	RSNA 2025 Nov 30 - Dec 04 https://www.rsna.org/annual-meeting
Dec 05 **Bern**	SSRMP AMP Meeting Dec 05 https://ssrpm.ch/continued-education/calendar/
Mar 04 Vienna, A	European Congress of Radiology ECR 2026 Mar 04 - Mar 08 https://www.myesr.org/congress/
Mar 08 Pichl, A	Winterschule Pichl: Strahlentherapie, Schwerpunkt biologische Aspekte Mar 08 - Mar 13
Mar 15 Pichl, A	Winterschule Pichl: Audiologie bei implantierbaren Hörsystemen Mar 15 - Mar 20 https://www.winterschule-pichl.de/
Mar 15 Pichl, A	Winterschule Pichl: CT & Intervention Mar 15 - Mar 20 https://www.winterschule-pichl.de/
May 15 Stockholm, SE	ESTRO 2026 May 15 - May 19 https://www.estro.org/Congresses/ESTRO-2026
May 28 **Lausanne**	Swiss Congress of Radiology SCR'26 May 28 - May 30 https://congress.sgr-ssr.ch/
Sep 26 Valencia, E	6th European Congress of Medical Physics ECMP Sep 23 - Sep 26 https://ecmp2026.efomp.org/

And please, if you participate in any conference or meeting, think of writing a few lines or sending a picture for the Bulletin.

THANK YOU!