BULLETIN

December 2019

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 96 www.ssrpm.ch

Editorial

Letter from the Editors

Dear SSRMP members,

We approach the end of yet another year and - as is tradition - the Chairs of the different SSRMP Committees give us an overview of their activities and goals pursued over the entire year, together with the results of the certification exams and of the TLDs intercomparison.

Only a couple of reports from the late summer-early autumn conferences populate the Issues of Interest. Please, don't hesitate to send us your personal notes and impressions from an interesting, or an otherwise not-so-interesting event you have attended. What has inspired, intrigued or enlightened you, can't harm other medical physicists. ;)
Nevertheless, I can understand that many of us over the summer and during the amazingly warm and sunny autumn had different priorities rather than attending congresses, e.g. beautiful bike rides through the colorful Swiss autumn sceneries, or stimulating treatment planning world championships (!), maybe?
Indeed, this Bulletin issue offers two absolutely unedited and out-of-the-box articles, which can't help but increase our pride of being temporarily or more permanently part of this country. Find them in the Issues of Interest section!

A big congratulations to the people who passed the SSRMP exam this year, many wishes to the people presenting themselves in the Personalia section for their new fresh start and an exciting new development in their career, good luck to all those aspiring to obtain the SSRMP Research Grant or Varian Award 2020, or any other grant. As we could see during the annual meeting in November, there is still a lot to work on, and radiotherapy implementations and research fields are slowly trespassing into the confines of so many different areas! (radiobiology, artificial intelligence, technology, chemistry, physics, even politics and economics!)

And to all the readers and members of SSRMP, may you have a white, but warm Merry Christmas, and a great start to the new year!

Francesca Belosi,
On behalf of the Editorial Team.

Contents

BULLETIN 96 - December 2019

SSRMP News

Cover Image: Hans Bethe (left) and Boyce Mc Daniel (right) riding a bike at Cornell Eelectron Storage Ring - Kindness of Cornell University Photography. Robert R. Wilson papers, #14-22-3093. Division of Rare and Manuscript Collections, Cornell University Library.

Issues of Interest

PRESIDENT'S ANNUAL REPORT 2019

Dear colleagues,

A year ago, we have had our last SSRMP general assembly in Lausanne during our annual meeting. First of all, I would like to thank Raphaël Moeckli and Nicole Tille for the organization of last year's annual meeting. We had a broad variety of topics ranging from diagnostic imaging and radiobiology to radiation therapy. In addition, excellent presentations from the invited speakers Mauricio Reyes and Ben Heijmen showed how to deal with deep learning and auto-planning, respectively. At the general assembly Peter Manser stepped down as president and I would like to thank him for his tremendous work and special effort he spent for our society. The general assembly elected a new board and me as the new president.

Already one year past, within which the board had 6 meetings. Many different topics were discussed and can be summarized as follows:

- Two AMP meetings
- Active support of SSRMP working groups (new recommendation No. 10)
- Two meetings with BAG
- Collaborations with other societies
- SSRMP continuous education day
- Research grant
- Varian prize
- Annual meeting at PSI

During the two AMP meetings the board communicated these topics in more detail and I would now like to select a few aspects among the many in this report.
First, there was the publication of the revised version of our recommendation No. 10 about "*Reference Dosimetry of High-Energy Therapy Electron beams with Ionisation Chambers*". A huge amount of work and knowledge was put into this revision and I highly appreciate the efforts of the working group members, especially Samuel Peters from St. Gallen, who chaired this working group.

Further, I would like to mention the SCR'19 in St. Gallen in June, which was a really special event, since for the first time several joint sessions of SSRMP with partner societies were included. The feedback from these societies was very positive and thus, we will continue our collaboration also for the SCR'20 in Fribourg next June by organizing several joint sessions. Furthermore, there were also several exchanges with DGMP

PRESIDENT'S ANNUAL REPORT 2019

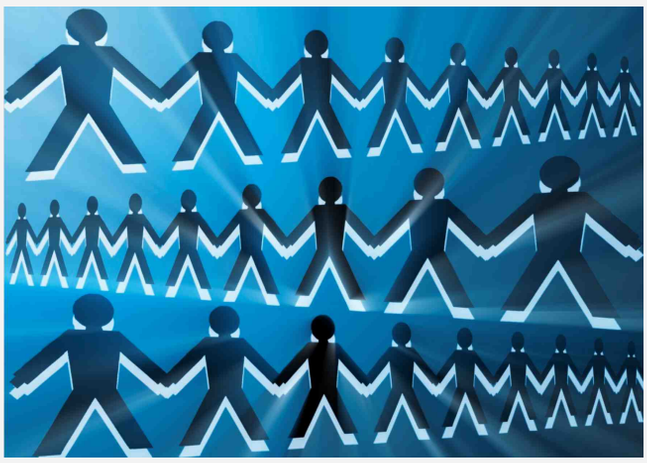
and ÖGMP. Apart from the 50th anniversary of DGMP, which was celebrated with many dedicated sessions at the DGMP annual meeting in Stuttgart, there were discussions in the context of the next Dreiländertagung in Vienna in 2021, the future trends of the "*Zeitschrift für Medizinische Physik*" and the Winterschule in Pichl. In this context, I would like to thank Peter Pemler, who left the Kuratorium after 10 years of strong engagement and also Peter Manser, who took his position as Kurator.

Apart from collaborating with other societies there were also several topics we worked on together with the BAG. For example, the hearing for the new BAG guideline about the security of high radioactive sources. I would like to thank especially Hans Neuenschwander who took the lead in preparing the feedback of SSRMP and the very fruitful discussions. This feedback was strongly recognized by BAG in the final version of the guideline. Another topic with a lot of discussions was the 3rd week of the radiation protection education. However, I believe that the concept will soon be recognized by BAG and can then be introduced in practice.

One of the highlights in my opinion was the SSRMP continuous education day 2019. Thanks go to Peter Manser, who organized this event in Bern just about a month ago, for preparing such an interesting program about training and education in radiation protection. Several different methods and ideas on how to train and educate were presented along with concrete practical experiences including a very impressing presentation about copyright issues in the context of teaching. It was fascinating to see how broad the options are and how much effort is spent on training and continuous education in our field.

There were many more activities going on over the last year and I point to the dedicated reports by the three permanent committee chairs for more information about further SSRMP topics. This gives me the opportunity to express special thanks to Regina Seiler, who jumped in as chair of the education committee ad interim last year, Jean-Yves Ray (professional chair) and Raphaël Moeckli (science chair). All of them are doing an incredible job and it is really a pleasure to have them on board for these tasks. Once again, a great thank you!

PRESIDENT'S ANNUAL REPORT 2019



Moreover, I would like to thank all of the board members for their great support and availability to my calls, emails, requests, meeting invitations, etc. It's far from self-evident! There is Regina Seiler taking care of all financial aspects as our treasurer. She deserves a huge thank you for her engagement and efforts to get everything straight. Working with her side by side over the last year opened my eyes about the tremendous and great job she is doing for our society. Also special thanks to Roman Menz with his huge support as secretary. In addition, I would like to give my thanks to Yvonne Käser, Stefano Presilla and Stefano Gianolini. While Yvonne made a huge effort in representing SSRMP in the steering committee for clinical audits, Stefano Presilla is highly active in the professional affairs committee and Stefano Gianolini is strongly committed to represent SSRMP within EFOMP. I also thank Markus Notter for his support from a different perspective and his swift responses to my requests!

Of course, there are many more supporters, who actively contribute for a successful SSRMP and deserve a great thank you. Too many to name them personally, however, I just would like to take the opportunity to thank all the members engaged in our working groups and committees, the authors and the editorial of the bulletin, the mentors, lecturers, speakers, auditors and delegates and all who contribute in the one or the other way for SSRMP. So, Thank You All.

Michael K Fix,
SSRMP president

PROFESSIONAL AFFAIRS

Professional Affairs Committee Annual Report 2019

If last year I reported mostly on work-in-progress developments, this year is the year to profit from the harvest. Major steps have been achieved and already communicated to you. Nevertheless, not all the works have been completed yet. Only the main topics that the professional affairs committee has managed during this year's term are reviewed here although the committee members have been involved in many other issues managed by the board and other committees.

The new official **SSRMP Newsletter** was launched last June. Using a well-established web-based platform, we designed a new channel to communicate with you. The executive board and other society representatives use it as a newsletter to inform you regularly about your society and their related activities. Moreover, this channel can be also used by the members. Distribution is limited to the members only. I am happy to say that none of you has unsubscribed from the Newsletter so far.

The **SSRMP intranet website** was launched closely after the Newsletter. To develop this complementary website, we collaborated with the web agency that supports SSRMP to maintain their web services. The intranet is an additional key component of how your society communicates with their members. Through this website the executive board, as well as other SSRMP bodies, provide you restricted information to be shared with SSRMP members only.

Successfully operating these web services means handling users' personal identification data. We have established the **privacy policy** that describes how personal data are processed by the society. SSRMP mainly deals with its members' data and applicants to the certification but also with those of the participants at the events SSRMP organizes like congresses and courses. The privacy policy is available at the following address: **https://ssrpm.ch/privacy-policy**.

Every year, it is a major effort to offer the members three issues of the **Bulletin** with attractive content. On behalf of the editor team, I thank all of you who have contributed to the Bulletin with an article or more and encourage the others among you who have not yet. If you get embarrassed by writing in English, let me remind you that the team is ready to help. Nevertheless, we still accept your contributions written in German, French or Italian. A warm thanks to Francesca, Shelley and Nathan for their commitment.

At the last AMP meeting in June, the committee presented a tentative position statement on the **role of the medical physicist**. This position statement aims to help the medical physicist to apply art. 36 that defines in the RPO the extent of its involvement in medical radiological procedures.

PROFESSIONAL AFFAIRS

This document further develops this article based on a critical review of the EFOMP policy statement 16 taking into account the widely accepted practices in Switzerland. In that context, the committee will carefully follow the current EFOMP efforts to effectively apply its policy in the clinical field as reported at the last Council meeting in Warsaw by our delegate, Stefano Gianolini. The document is still available for consultation on the intranet.

The committee continued its **collaboration with the Swiss Society of Radiology**. Under the leadership of Roman Menz, we collaborate on the scientific program of the Swiss Congress of Radiology by setting up joint sessions dedicated to medical physics. We hope that you take this opportunity to submit your abstracts.

We haven't run the "**salary survey**" for 2 years. So, Stefano Presilla will organize the 6th survey next year. To provide our medical physicist members with accurate unbiased data, a significant participation rate is required. Consequently, we encourage you to take part to this survey. For the last survey, we had already taken serious measures to keep your personal data confidential and not visible from the committee members. Forget your reluctance, let yourself be convinced!

This report represents what the committee members could achieve within the limit of their resources. Your feedback is welcomed. It would be nice to hear from you.

Let me finish with warm thanks to my committee team.

On behalf of the committee for Professional Affairs,
Jean-Yves Ray
November 22nd, 2019

PROFESSIONAL AFFAIRS

SSRMP delegate on EFOMP Council Meeting 2019

Once a year the European Federation of Organisations for Medical Physics (EFOMP) statutes require a face-to-face General Assembly of the company officers together with the delegates of the National Member Organisations (NMO). In fact the EFOMP consists of two entities: “a Company” limited by guarantee in England and Wales and “the Federation” that acts as a professional society. The Officers of EFOMP are the directors of the Company and the members of the Council of EFOMP are the members of the Company. For the NMO delegates this is the best opportunity to meet many of the colleagues with whom there has been regular contact via email during the year.
Since the starting of the European Congress of Medical Physics (ECMP), which takes place every two years, the EFOMP General Assembly has been combined with the congress and is organized at the invitation of a national society every other year. This year the assembly took place in Warsaw, Poland, the 12th of October.

The EFOMP is actually an umbrella organisation for more than 9’000 medical physicists and clinical engineers working in the field of medical physics. During the last few years, many efforts have been put into the creation and into the improvement of educational opportunities, especially for the NMOs with a small number of members or with difficulties in the organisation of quality training programs. On the EFOMP homepage (http://www.efomp.org) you will find all the information concerning the European School for Medical Physics Expert and the EUTEMPE-RX program. In last year’s report presented by Elina in Bulletin 93, she mentioned the possibility for participants of the EFOMP courses to review the videos of the presentations through an e-Learning platform. Due to the high costs to maintain such a platform, the assembly decided to create an Individual Associate Membership category that will allow the vision of the EFOMP educational material at the annual fee of 15 EUR.

EFOMP currently has regular contacts with all the professional societies close to our field, with the industry and with the authorities. In this report, I will not try to summarise all the collaborations, working groups and projects where representatives of the EFOMP are present. During the assembly, the new EU’s Medical Device Regulation and the gender balance in EFOMP have been long discussed as requested by different NMOs.

Finally, I would like to encourage all our members to register to the EFOMP newsletter and to consider participating in one of the different EFOMP working groups listed in the science section. I hope to see all of you at the next European Congress of Medical Physics in Turin.

Stefano Gianolini

Do you know your delegate?

Although the SSRMP president is the first representative of the society, the executive board may require the support of additional delegates.
The board shall formally appoints a delegate as representative to another society or an authority's body to act on behalf of the SSRMP.
This article describes the tasks of one of your delegates.

http://ssrpm.ch/the-society/board/

-> Section "Delegates to other societies"

EDUCATION

Education Committee Annual Report 2019

This past November ten medical physicists were newly certified, bringing the total number of SSRMP certified medical physicists to 190. This is getting to be a big number for a volunteer organization to handle, and certain organizational changes will have to follow. We are yet at the beginning of tackling this task. As a consequence, the various databases that exist should be consolidated into only one. Whether this is feasible, taking into account all the details of the exam preparation (keeping track of required documents such as radiation protection training, master thesis, mentor reports) remains to be seen, but it would already be a huge step to have the information of the certified medical physicists (certification year, renewal cycle) integrated in the official membership roster. Integrating the financial aspect (membership, renewal fee) into the same database is another goal. A first meeting on how to do this has taken place and the prospects look promising.
More than promising but instead reality is the license that has been granted by the Federal Office of Public Health (BAG) to SSRMP for the concept on how to make sure that the missing additional 40 lessons in radiation protection training are provided. This license, dated 19 November 2019, has reached us just after the general assembly, hence this slight discrepancy between the report given at the general assembly and this one here in the Bulletin. Annexes II and III of the certification guidelines (syllabus and responsibilities of the mentor) have been adapted to refer to this concept and the concept itself will be a new annex VI. What remains to be discussed with BAG is when this concept will take effect or more specifically who will be affected by it (in terms of application date to the certification). Once this is clear, the altered/new documents will be published on the SSRMP website.

This year's continuous education day in October dealt with radiation protection training/education and the current challenges and solutions and it was organized by Peter Manser.
Raphaël Moeckli and Frank Zimmermann have been organizing clinical education courses for medical physics trainees for a while now. In 2019, such courses were held in January and June with an upcoming one in December. Other participating physicians are Nicolaus Andratschke and Oliver Riesterer. Four courses are planned for 2020. Participation is highly encouraged, even if not mandatory for future certified medical physicists.

Being the SSRMP treasurer, I never expected to be given a second job, but this happened out of an unforeseeable necessity arising only two days prior to last year's general assembly. I agreed to take over ad interim until the next election, which means that a new chair of the educational committee is needed. There might not be much point in advertising the position this way and it's probably much more efficient to address people directly. However, I would still like to make it known that the chair of the education committee will be vacant, so that no one can claim that they didn't know.

On behalf of the Education Committee,
Regina Seiler

EDUCATION

Results of the Certification Exams in Medical Physics (SSRMP)

In the exams for the certification in medical physics SSRMP 2019 (29.10 - 08.11) the following colleagues succeeded:

From left to right:

Nicolas Pitteloud, Lausanne (Hirslanden)
Philippe Logaritsch, Luzern (Kantonsspital)
Lukas Wissmann, Münsterlingen (Kantonsspital)
Helmut Schneider, Aarau (Kantonsspital)
Stefanie Ehrbar,Zürich (USZ)
Damien Racine, Lausanne (IRA)
Damian Kozyra, Zürich (USZ)
Maria De Prado, Villigen (PSI)
Patrick Powell, Basel (Unispital)
Christoph Aberle, Basel (Unispital)

On behalf of the examination committee and the SSRMP board I want to congratulate the candidates for their certification and the new position in the community connected to that.

Stephan Klöck,
Allschwil 11.11.2019

SCIENCE

Scientific Committee Annual Report 2019

The Scientific Committee is composed of S. Bulling, M. Jaccard, P. Manser, M. Pachoud, S. Scheib, S. Tanadini-Lang and R. Moeckli.

The committee evaluated the applications for the SSRMP research grant. The application of H. Schiefer and S. Heinze of Kantonsspital St. Gallen, with the title «*Verification of the absolute dosimetry and the treatment chain for Tomo machines in the "cheese" phantom*» has been granted.

D. Dudka (Inselspital Bern), J. Krayenbuhl (University Hospital Zürich) and M. Matter (PSI Villigen) received the Varian "Anerkennungspreiz".

As in previous years, the different working groups had different levels of activity. Importantly, the revision of recommendation Nr. 10 about "*Reference Dosimetry of High-Energy Therapy Electron Beams with Ionisation Chambers*" has been finalized and released. I would like to acknowledge the great work of S. Peters as chairperson and the working group members. More generally, I would express my gratitude to all the working group participants for the time they spend to contribute to our society. I also warmly invite anyone who is interested in joining a working group to contact the chairperson of the relevant group. The list of working groups and chairpersons is on our website (www.sgsmp.ch).

Two AMP meetings took place in Bern in 2019. As usual they were the occasions where discussions took place concerning different topics of medical physics. As a reminder, the AMP meetings are open to any member.

The 2019 SSRMP intercomparison showed good global results concerning the photon beams and slightly less satisfying results for electron beams (see the report in the Bulletin). I thank Claude Bailat and Thierry Buchillier for this huge work.

On behalf of the Scientific Committee,
Raphaël Moeckli

SCIENCE

Results of the TLDs Intercomparison for Megavoltage Units 2019

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 2019 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, we focused on electron beams. Static photon beams were also audited if requested by the users.

Thirty-one institutions took part to the 2019 intercomparison with a total of 165 beams checked, including 113 electron beams and 52 photon beams.

Similar to past audits, the requirement was to check each electron or 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.

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 2018 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 10cmx10cm. The frames have been filled with five plain RW3 (PTW Freiburg) slabs, and one slab containing three TLD. The slab dimensions are 40mmx40mmx10mm. 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.

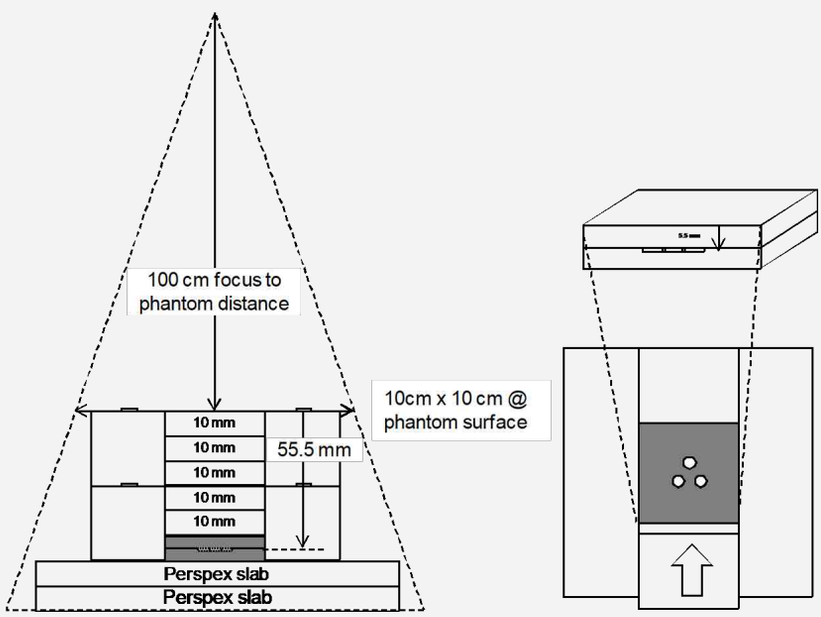


Figure 1. Assembly of the measurement equipment for photon beams: phantom and (closed) phantom frame

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 (PTW Freiburg) 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.

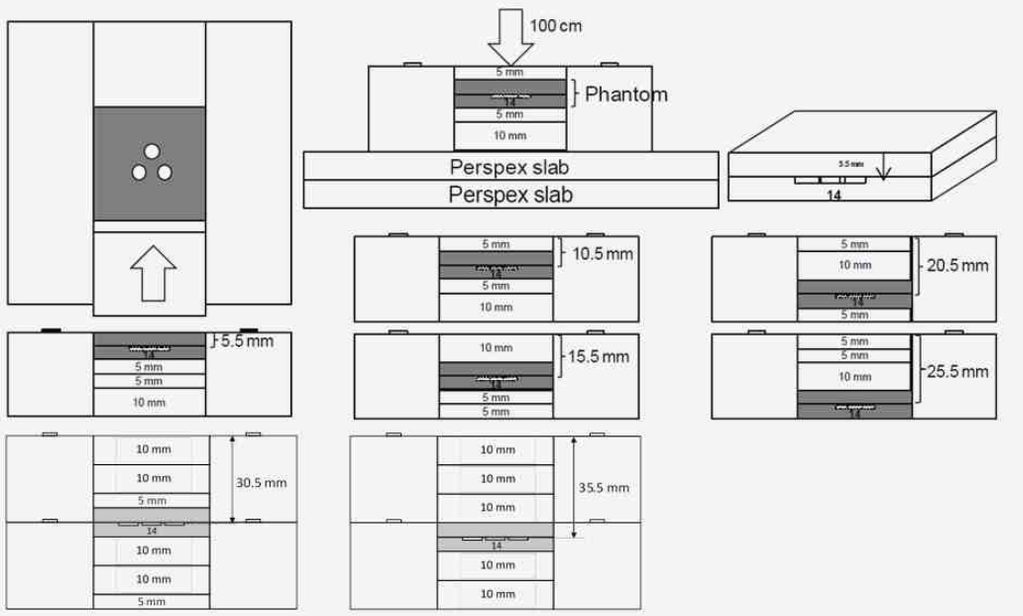


Figure 2. Assembly of the measurement equipment for electron beams: phantom and (closed) phantom frame

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. We calibrated the cobalt irradiator directly in terms of absorbed dose to water for a given radiation quality against the reference dosimeters for photons and for electrons calibrated at METAS.
For photons, the cobalt irradiator calibration was achieved by means of two series of TLD. One series were irradiated in the solid water phantom in the intercomparison conditions using the 6, 10 and 18 MV beams of the Elekta at CHUV, while the reference value of the absorbed dose to water was determined with the reference dosimeter in a water phantom in the same geometrical conditions. The other series of TLD were irradiated in the calibration laboratory with the cobalt irradiator at IRA for a known time duration. Then these two series of TLD have been read in a same batch and this provides the link between absorbed dose to water in a water phantom and the exposure time on the cobalt irradiator (for each radiation quality). This allows us to prepare reference TLD at IRA for each series of measurements in the participant's beams. The procedure was adopted in agreement with Dr. Ch. Kottler from METAS.

For electrons, a similar procedure was carried out in the electron beams of the linacs at CHUV and at the Hirslanden clinic of Bois-Cerf in Lausanne. The results were not fully satisfactory. Despite the large number of TLD chips irradiated in each radiation quality (18 chips), an unexplained variability of the calibration between the beams was observed. The same behavior was observed on both linacs. We decided then to adopt the energy specific calibration factor which was determined by the organizers of the SSRMP 2010 intercomparison, the medical physicists of Kantonsspital St.Gallen and METAS. This factor is in fact independent of the energy and its value is 1.056±0.008 (relative to Co-60). For our routine clinical dosimetry of electrons, we use the value of 1.060 for TLD-100 3.2x3.2x0.9mm^3 chips, which is in good agreement.
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 10cmx10cm 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 (5.5 mm), 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.

Five runs of measurements were necessary for the 31 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 1.00 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 reference TLD. Finally, the corrections mentioned above were applied.

3. Results

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

3.1 Electron beams

The obtained average ratio for the different beam energies is given in Figure 3. For all beam qualities but 9 MeV, this repartition and the corresponding standard deviations seem to show that the deviations from the unity might be attributed to statistical fluctuations.

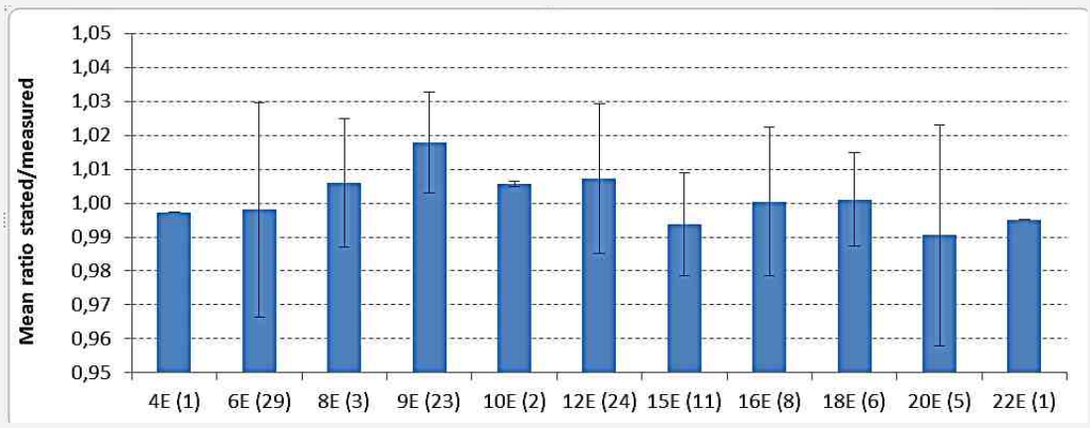


Figure 3. Electron beams: mean D_s/D_m values for the different radiation qualities. The number of beams is given in brakets. Errors bars=std dev.

The distribution of the D_s/D_m ratio for all the electron beams is illustrated in Figure 4.

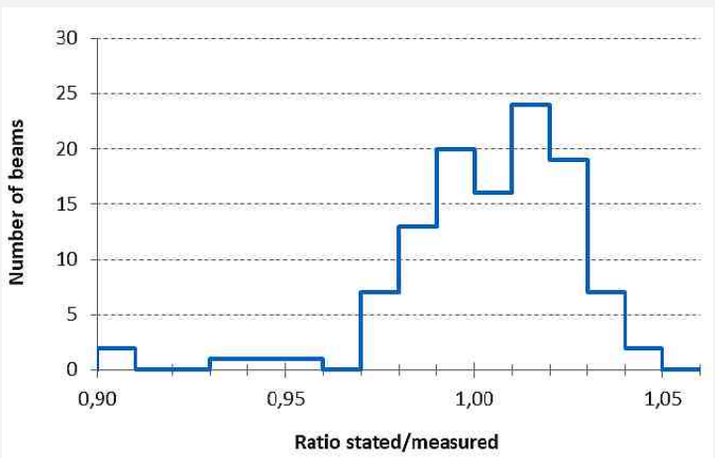


Figure 4. Electron beams: histogram of D_s/D_m values for all 113 beams

The statistics of the D_s/D_m ratio for all the electron beams are given in Table 1.

Parameter	Electron beams
Beam number	113
Mean	1.004
St. Dev.	2.4%
Minimum	0.906
Maximum	1.047

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

The mean value of D_s/D_m for all beams is 1.004. A bias between the participant dosimetry and the TLD dosimetry of this audit might be present, especially for the 9 MeV beams.
97% of the results are in the interval 0.94-1.06, i.e. within ±6%, which is judged satisfactory. The three cases beyond ±6% corresponds to the same linac. In addition, 88% of the results are in the interval 0.97-1.03, i.e. within ±3%.
The probability for the D_s/D_m ratio to be outside of the interval 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.

3.2 Photon beams

We checked 35 conventional beams with flattening filter (FF) and 17 flattening filter free beams (FFF). The obtained average 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.

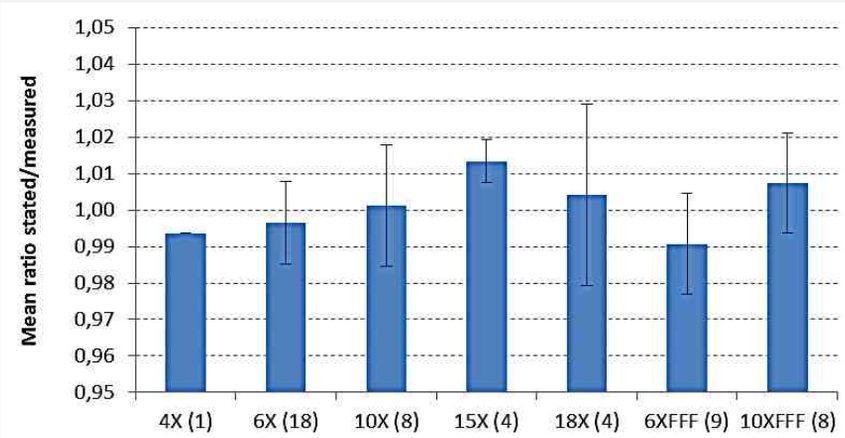


Figure 5. Photon beams: mean D_s/D_m values for the different radiation qualities. The number of beams is given in brakets. Errors bars=std dev.

The distribution of the D_s/D_m ratio for all the photon beams is illustrated in Figure 6.

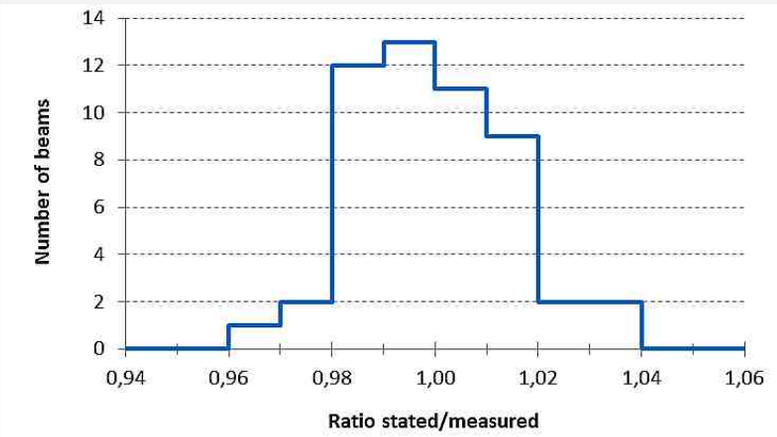


Figure 6. Photon beams: histogram of D_s/D_m values for all 52 beams

The statistics of the D_s/D_m ratio for all the photon beams are given in Table 2.

Parameter	FF Beams	FFF Beams	Both types
Beam number	35	17	52
Mean	1.000	0.999	1.000
St. Dev.	1.5%	1.6%	1.5%
Minimum	0.973	0.964	0.964
Maximum	1.036	1.034	1.036

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

The mean value of D_s/D_m for all beams is 1.000. There is no significant difference between the mean values of D_s/D_m for FF beams (1.000) and FFF beams (0.999).
All results are in the interval 0.96-1.04, i.e. within ±4%, which is satisfactory. In addition, 87% of the results are in the interval 0.98-1.02, i.e. within ±2%.

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 six irradiations of 300 TLD.

Contribution	Comment	Photons std. unc.	Electrons std. unc.
Positioning	± 1 mm	0.2%	0.2%
Co-60 irradiator calib.	-	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.

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

Dosimetry protocol

All participants carried out the reference dosimetry using the SSRMP recommendations No. 8 and No. 10, or the IAEA TRS-398 protocol, with the exception of the CyberKnife and Novalis.

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. Three participants applied such corrections, all of them for a PTW 30013 chamber. The first correction factor amounts to 0.9990 for 6XFFF and to 0.9966 for 10XFFF beams and the second one amounts to 1.0016 and 1.0037 (mean values). One can see that these two corrections cancel out.

4. Discussion and Conclusion

The dosimetry of 165 beams has been checked. The results of the 2019 TLD dosimetry intercomparison are good. For the electron beams, 97% of the checked beams met the satisfactory criteria of ±6% and 88% were within ±3%. For the photon beams, all the checked beams met the satisfactory criteria of ±4% and 87% were within ±2%.

We thank Dr. R. Boucenna (Bois-Cerf), Dr. H. Schiefer (St.Gallen) and Dr. S. Vörös (METAS) for the TLD calibration factors for electrons, and all the medical physicists for their participation. Thanks to their excellent collaboration, we were able to respect the time schedule.

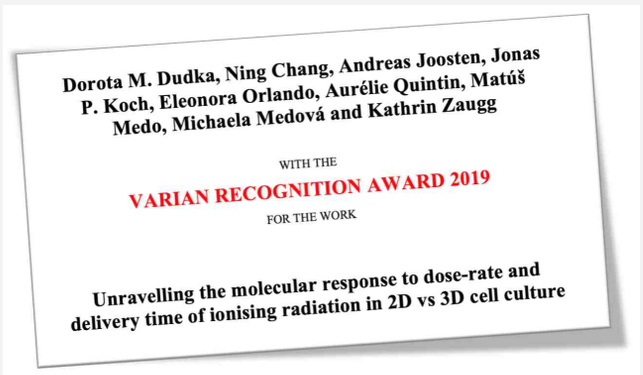
Thierry Buchillier and Claude Bailat
CHUV - Institut de radiophysique (IRA)
Rue du Grand-Pré 1
1007 Lausanne,

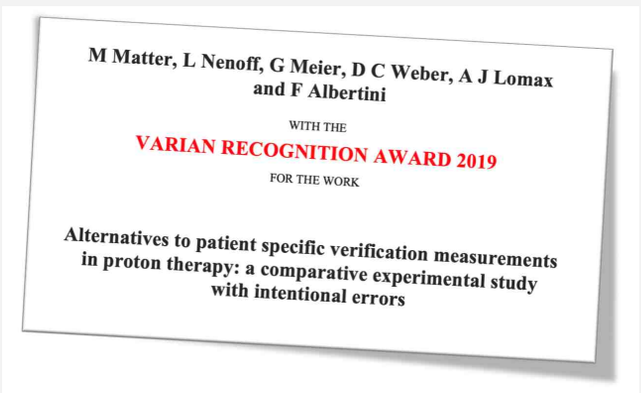
22.07.2019

SCIENCE

Varian Award 2019

At the general assembly on November 21, 2019 in Villigen, three papers were awarded with the Varian Recognition Award of Radiation Oncology of SSRMP:





We congratulate the winners and thank them for the important work. In addition, we thank **Varian Medical Systems** for their support.

Raphaël Moeckli, IRA, Lausanne
President of the Varian Prize Committee

SCIENCE

SSRMP Research Grant 2019

The 2019 SSRMP research grant has been awarded to H. Schiefer and S. Heinze of Kantonsspital St. Gallen for their project:

«Verification of the absolute dosimetry and the treatment chain for Tomo machines in the “cheese” phantom»

The project aims at *“… investigating [in the context of Tomotherapy interomparison] whether the cheese-phantom-based setup, analogous to the IROC setup, shows a systematic offset of the dose stated by the institution and the TLD measurement. If this does not apply, the cheese phantom-based setup can be treated as a valuable alternative for future TLD intercomparisons for Tomotherapy machines."*

In the name of the Science Committee and the SSRMP board, I would like to congratulate the awardees.

Raphaël Moeckli, IRA, Lausanne
Chair of the SSRMP Scientific Committee

SCIENCE

SSRMP Varian Award for Radiation Oncology

Deadline for submission to the president of SSRMP (michael.fix@insel.ch):
March 31st 2020

Award rules:

1. SSRMP can award during the annual general assembly up to three Varian prizes. The maximum amount for a single Varian prize is SFr. 3'000.-. Varian Medical System Inc. donate to SSRMP each year SFr. 3'000.- for the Varian prize.
2. The prizes are given to single persons or to groups, which have made an excellent work in radiobiology or in medical physics. Members of SSRMP or groups with at least one member of SSRMP are legitimate to attend with a manuscript or with a published or unpublished paper of special importance, special originality or special quality. The size of the work should not exceed the normal size of a paper. A thesis normally exceeds this size. The person, who enters a paper written by more than one author, should have contributed the major part to this paper. The consent of the co-authors must be documented.
3. The winner gets the prize amount, as well as a diploma with an appreciation.
4. The invitation for the Varian prize is published in the bulletin of SSRMP. Direct applications or recommendations of other persons can be sent to the President of SSRMP. The documents should be entered in four specimens not later than six months before the annual meeting.
5. A prize committee judges the entered works. It consists at least of three members of SSRMP and is elected or reelected for 2 years by the SSRMP board. At least one member of the prize committee should be member of the SSRMP board.
6. The prize committee constitutes itself. The decision of award together with the appreciation should be sent to the board for approval.
7. Varian Medical Systems Inc. is indebted to announce in written form each change of the prize amount or a termination of the contract to the president of SSRMP at least one year in advance.
8. This regulation was accepted by Varian Medical Systems Inc. (Switzerland) September 27th, 2006 and renewed by the annual assembly of SSRMP September 27th, 2007. It can be changed only with the approval of Varian Medical Systems by a decision of the annual assembly of SSRMP.

Note that there will be an award ceremony during the general assembly in 2020 and a publication of the Varian prize recipients is then taking place in the SSRMP bulletin and on the SSRMP website.

Raphaël Moeckli, IRA and CHUV - Lausanne
President of the Varian Prize Committee

SCIENCE

SSRMP Research Grant 2020

In order to support and promote the scientific activities of our members in Switzerland active in all fields of Medical Physics, a research grant is provided by SSRMP. As in the last years, a financial grant of maximum 7'000 CHF is offered for research projects fulfilling proper eligibility criteria.

The projects should:

- be promoted by at least one regular member of SSRMP
- be conducted entirely in Switzerland in one of the private or public institutes active in the field
- preference will be given to projects involving more than one institute aiming to a trans-linguistic and trans-cultural cooperative model
- be strictly linked to a field of interest of SSRMP
- be completed within the time span of one year from grant assignment

The group that will be awarded with the grant will have to provide the SSRMP Science Committee with a detailed report (inclusive of costs justification) at the end of the one-year period and will guarantee the publication of a scientific report in the SSRMP Bulletin. The scientific report should be, pending scientific committee's review and approval, submitted for oral contribution to the annual SSRMP meeting.

Deadline for submission of proposals is June 30th 2020.

Proposals should not exceed four A4 pages and should contain:

- project title, duration and financial request
- principal investigator's and co-investigator's names and responsibilities in the project
- short description of the scientific background
- short but detailed description of the project
- short description about current state of the art in the field

Proposals should be submitted via email to the chair of the SSRMP Science Committee:
raphael.moeckli@chuv.ch

Save the Date!

Winter School
"Dosimetry Guided Treatment Planning for Radionuclide Therapy"

March. 04th – 06th, 2020
Bern, Switzerland

The school targets medical physicists, physicians and technologists involved and interested in the workflow of clinical dosimetry in support to radionuclide therapy. The aim of the school is to present bases of quantitative imaging and dosimetry methodologies to support patient-based dose planning and verification in clinic. The school also aims to promote a common/shared knowledge and cooperation of different partners involved (physicians, physicists and technologists).
Research and commercial solutions to assist quantitative imaging and dosimetry workflows will be also presented and discussed.

Venue: Inselspital Lecture Hall of Dermatology & Aula 018, University of Bern

Scientific Organising Committee:
PD. Dr. Kuangyu Shi, Insel **(kuangyu.shi@dbmr.unibe.ch)**
Dr. Silvano Gnesin, CHUV **(silvano.gnesin@chuv.ch)**
Dr. Thiago VM Lima, KSA/CHUV **(Thiago.VMLima@ksa.ch)**

Registration:
it will be soon available at: **//ssrpm.ch/event/**

N.B: The Winter School is in the process of obtaining accreditation from the FOPH as continuing education in Radioprotection

Technical Meeting on Experience and Results in Implementing the Safety in Radiation Oncology Reporting and Learning System (SAFRON)

IAEA Headquarters, Vienna 30th September - 2nd October 2019

SAFRON is an integrated voluntary reporting and learning system of radiotherapy incidents and near misses managed by the IAEA as a web based platform with an incident database and a lot of highly valuable information and training material on safety and quality in radiation oncology. Have a look at:
https://www.iaea.org/resources/rpop/resources/databases-and-learning-systems/safron !

The main goal of SAFRON is to improve the safe planning and delivery of radiotherapy by sharing safety-related events and safety analysis around the world. Thus it is dependent on facilities registering and sharing incidents that occur in their institutions.

Having started in December 2012, SAFRON currently has 159 registered radiotherapy facilities and hospitals all over the world, and additionally receives data from 4 regulatory authorities. The system has now over 1600 radiotherapy incident reports. Since its inception 4 modifications and upgrades have been provided in an attempt to improve its use in the radiotherapy community to prevent patient incidents in radiotherapy.

In this Technical Meeting, SAFRON users from several countries from almost all continents shared their experience with incident learning systems to influence next improvements in the system. Also, representatives of several professional organizations – AAPM, EFOMP, ESTRO, and IOMP – shared their vision on how to improve safety and quality in radiotherapy. Other topics were the discussion on how to increase the number of SAFRON users and events, and the link to prospective risk analysis.

Having lost our Swiss pioneering project of Léon André's RO-CIRS and www.rosis.ch, you may consider contributing to the international SAFRON or the European ROSEIS incident learning system.

Any questions?

Karin Münch,
Lindenhofspital Bern
Tel: 031-300 95 32
email: karin.muench@lindenhofgruppe.bern

SSRMP Education Day on Continuing Education in Radiation Protection (I)
25th of October 2019, Bern

This year's continuous education day focused on current implementations and challenges in training and education in radiation protection.

P. Trüeb from the FOPH gave the framework of the continuous education according to the legislation. In Switzerland, around 95,000 persons are professionally exposed to radiation and among them 70,000 are working in medicine, which clearly shows that hospitals and clinics are charged with a huge responsibility to train their personnel. P. Trüeb also addressed the definition of education and training. When we provide theoretical knowledge, we talk about education, while training concerns more practical approaches to provide knowledge, for example with the use of radiological machines.
Regarding the continuous education for medical physicists (the 8 hours every five years), it must be recognized by the FOPH. Courses on radiation protection from IRA and PSI are already recognized. **Congresses such as SASRO, ECR, SSRMP and ECMP can be recognized but they need to be specially approved by the FOPH.**

Two presentations by M. Fix and P. Manser concerned the training of medical physicists. SSRMP provides courses that are of interest to medical physicists (not necessarily recognized as courses on radiation protection):

- Clinical educational courses
- Pichl Winterschool
- SSRMP congress
- SSRMP Educational Days

The fundamental education on radiation protection for medical physics candidates is provided by PSI and IRA in an 80-hour training. There are 40 hours left to reach the legal requirement (120 hours), which are unofficially covered during the clinical practice. To formalize this training, SSRMP will soon publish new guidelines on topics to be covered and specific learning objectives. A logbook with training experiences, comments, exercises, etc. shall be prepared by the candidate and sent to the mentor to prove that radiation protection aspects for radiation therapy, nuclear medicine and radiology were studied during the clinical practice. SSRMP awaits approval by the FOPH and will soon inform the mentors and candidates.

M. Buchgeister from Germany presented the use of webinars by the German society of medical physics (DGMP). For continuous education, 15 credits are recognized per year without a certificate of participation. This was decided after that the DGMP education committee realized that medical physicists watched a webinar as a group, but only one person was subscribed to the webinar platform. The webinar list grows every year with 3 to 4 webinars per semester. Good presentations are chosen by the DGMP and presenters are asked to repeat it in an electronic platform. In the table below, a description of the characteristics of seminar, webinar and e-learning is shown as given by M. Buchgeister.

Issues Of Interest

		Seminar	Webinar	E-Learning
Characteristics		live	online, live	offline
		Direct contact of speaker to audience	Limited contact via chat window	No direct contact. Maybe: e-mail, forum, chat
		Speaker sees and can react to oral questions	Speaker may miss written questions and might react	No contact > No reaction!
What does a good one of these need?	Interesting topic	yes	yes	yes
	Well structured	yes	yes	(yes)
	Alert speaker	yes	(yes)	-
	Employe audience feedback	yes	(yes)	-
	Activating audience elements	yes	-	-

K. Dula, dentist, shared his personal fight to convince his society to develop a course on CBCT. It was interesting to see that radiation protection and training is in reality a political affair. What was of particular interest was his comment, that in the future with the advancement in technology, only specialized and well-trained dentists should perform complex examinations, such as CBCT.

M. Fix presented different formats for “Journal club” in order to keep the whole team updated. Differences occur in the number of presenters, number of articles or journal to be covered, number of participants, discussions followed, duration and frequency. Each format has advantages and disadvantages and of course, one can freely choose to create the format that can best cover the needs of his own team.

Further presentations included also experiences and solutions in training in radiation protection by different hospitals and clinics (cantonal hospitals of Lucerne, Ticino, St. Gallen, Valais and Hirslanden clinic). Many presenters agreed that live presentations are ideal for the training of the participants. Presenters get to know better the needs of the public, can answer questions and improve the public image of medical physicists. However, e-learning can more easily cover the needs for resources (time, presenters, and organization issues) and the number of participants, especially in big hospitals. P. Trüeb specified that the license holder is responsible to provide the continuous education in radiation protection and to assure that everyone follows the courses.

Finally yet importantly, a remarkable presentation on the copyright was given by K. Houshangpour. He talked about copyright issues in Switzerland, indicated that the legal framework differs from country to country and specified that the copyright belongs to the presenter and not to the institution for which the presenter works. Maybe, one of the next SSRMP educational courses should be on this topic, which may not be related to medical physics, but it is related to medical physicists and their everyday life!

Elina Samara
Hôpital du Valais, Sion

SSRMP Education Day on Continuing Education in Radiation Protection (II)
25th of October 2019, Bern

Disclaimer: I first wrote this report for me. Therefore I have not always been neutral in my opinions or comments. This is the more useful for my work, but this is not an indication of my final opinion. Keep this in a safe place and be as forgiving as possible with me.

In any case, I learned a lot during that day! Great thanks to the organizer, Peter Manser.

1. Overview of the revision of the Ordinance (ORap) on Training and Education

In Switzerland, there are 95,0000 exposed workers, 70,000 of whom are in medicine.

To define the two English terms:
i) **education**: it's more theoretical
ii) **training**: it's more practical

The institution (HFR for example) is responsible for training in radiation protection before the first day of work.
The required further training is based on a frequency of 5 years:
- Updating skills
- CIRS
- New developments
- Integration of practical examples

If there is a mandatory recognition of suitability for the position, the continuing training must be recognised by the FOPH. Apparently, for medical physicists the only recognized courses are issued by the IRA and the PSI. It is always possible to follow other radiation protection courses, but they will not count towards the necessary quota (it is linked to the existence of SSRMP recognition professional aptitude). The institution must implement a concept and keep track of the continuous training planned and carried out (large register at the level of the institution). All training (recognized or not) must end with the delivery of a certificate.
The institution must:
- be able to demonstrate the existence of this concept of continuous training
- demonstrate that the concept is in action
- it is not necessary to show the individual records to the FOPH, but they will notice the creation of a large register or not.

2. Teaching at PSI (current and future solutions)

The PSI is the counterpart of the IRA for German-speaking people. The Francophones will surely prefer to take advantage of the IRA's offer. There are 76,500 hours delivered (participants) in 270 courses over a year. They deliver the expert course like the IRA (2 weeks).
A very good quote during the presentation : "***Pestalozzi (Head, Heart, Hands)***."

3. The third week of training for medical physicists

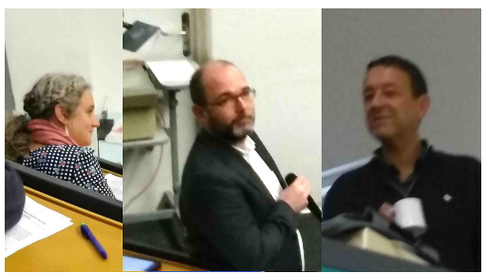
In the ordinance it is stated that we must (medical physicists) have 120 hours of basic training. There are 40 hours/week and two weeks for the radiation protection expert course and therefore it lacks a week of basic training in radiation protection. It seems that the missing 3rd week can simply be considered as integrated during the required 3 years of medical physics training, but the final formalization of this concept has not been done yet. In order to officially implement this 3rd week of training, a document has been created. When a mentor is responsible for a candidate SSRMP, he should refer to this document which indicates point by point the content of the training quantified in terms of hours required. There are:

- 14 hours for radiation oncology
- 14 hours for nuclear medicine
- 14 hours for radiology

(for a total of **42 hours**).

It appears that the document exists and the request for recognition of the new procedure by the FOPH is in progress.

4 Round table discussion



Q1. Which courses will be recognised by the FOPH for validation in Radiation Protection?

- There is the IRA and the PSI
- It should be noted that the version of the IRA is more oriented towards medical physicists while the PSI is aimed at a wider audience (power nuclear plants, lab, etc. . .)

Q2. Who should organize the recognition of radiation protection training?

The organiser of a training course must prepare the ground himself and request recognition as a radiation protection training course from the FOPH.

Q3. Will the concept of the third week be published soon on the SSRMP website?

Yes, we are awaiting approval from the FOPH.

5. The German Experience (DGMP) (Webinars)

(M. Buchgeister)

The Germans have been setting up webinars since 2009. The firm behind was Netviewer AG. Cisco acquired this company and included the concepts in the GoToMeeting portfolio around 2013.

Since then the Germans (DGMP) benefit from a very cheap license for a high number of participants (250). It's a very big organization and very experienced people are behind the implementation of this webinar system via GoToMeeting.

The 1:1 demonstration worked! No demo effect! A very good one period!

6. CBCT course for dentists

(Karl Dula, Dentist)

It's just an example of what's been done in their domain. The emergence of CBCT in dentistry has led to many misdiagnosis by physicians and it became clear that a course should be delivered.

7. Experience in continuing education in Central Switzerland

(Alexander Shegerer, LUKS - Lucerne)

They chose an e-Learning method. It is ILIAS: The Open Source Learning Management System. They built with the help of ILIAS their system, which includes PowerPoints, videos and audio recordings. Participants are tested at the end of their course to obtain validation (certificates).

Among the LUKS' recommendations: do not give up face-to-face contact during courses, possible with up to 100 participants.

8. Round table discussion

Q4. Is it the responsibility of the medical physicist to ensure that everyone gets enough training?

No, it is the institution's responsibility!

9. Intellectual property and copyright in the field of education

(K. Houshangpour)

Copyright belongs to the person and not to the institution! The law requires a person and this can only be the inventor (creator).

I didn't have time to take many notes on this presentation so important was the arrival of information and most importantly counter-intuitive to me.

One may wonder why to make this presentation on this radiation protection day, however, in the context of teaching, to clarify the concepts of intellectual property and copyright is more than appropriate. Especially nowadays, where copy and paste from Google is the established standard to prepare presentations. I'd say it was my favorite moment of the day.

10. Continuing education experience in St. Gallen (KSSG)

(Hans Schiefer)

Hans Schiefer presents St. Gallen's experience with the e-Learning. This method allows them to provide the right training very early in the professional life of a new person in the institution.

When there is an organized course, the organizer informs HR about the participants (registration) and their status (test passed or not = course validated or not).

11. How to build a 45-minute practical exercise with a radiotherapy simulator

(J. Ott, Bern)

It is an experiment with measurements and confirmed by Monte-Carlo. The question is where to place yourself to get the least possible amount of scatter. Even if the answer is well known by a medical physicist, the case study presented allows to see the whole concept both in terms of practical aspects and in terms of modeling and theory necessary to implement this modeling.

12. Round table discussion

Q5. How long did it take to prepare this e-Learning concept for St.Gallen?

3-5 Days.

Q6. How to do an end of e-Learning test and especially do the people accept it easily?

It is not clear, but at least, he did not observe any non-acceptance by the course auditors.

13. Continuing education experience in Bellinzona

(Luca Bellesi)

A fairly common situation for a public multi-site institution. There is a need to meet the legal requirements, but also and above all to improve radiation protection in the entire institution.

They chose to make in-person presentations to create a partnership situation with the various professionals. They believe they have succeeded in homogenizing the knowledge of radiation protection in their institution.

Similarly, by means of concrete situations or requests from employees, they adapt their presentations to best cover the real needs of employees.

14. Journal Club: a useful tool for teaching

(Michael Fix, Bern)

Michael presented the historical aspect of the first "Journal Club" which concept was born around 1733.

Goals of a Journal Club:

- Stay up to date
- Continuing education
- Criticism
- Promotion of valid concepts.

Journal Club format:

- A presenter
- A number of participants
- Select a journal and an article
- Define a frequency
- Define the goals
- Discussion on the article

It's quite similar to what is done in many institutions, but several points made me think and especially glimpse new ways to improve the implementation of the concept in my own institution.

15. Continuing education experience in Sion

(Elina Samara)

Elina discussed the role of the medical physicist as trainer in radiation protection. She was hired to handle radiation protection throughout the Valais public hospital network: in the CT, in intervention rooms, in nuclear medicine.

At level 1, she only teaches radiation protection and no medical physics. It's very convenient! She noticed that in order to have the right vocabulary for the operations performed by the professionals and guide them in their needs, a big part of clinical training for medical physicists is missing. This course (level 1) is given to operating room personnel (for example).

At level 2, she teaches the doctors, the physicists, MTRAs and nurses exposed to radiation. She wanted to use e-Learning solutions, but this has not been well accepted by the people who were to follow these teachings.

Medical doctors send their course certificates to HR, and HR is in charge. This is a difficult situation because the radiation protection colouring of the training is by far not clear to HR.

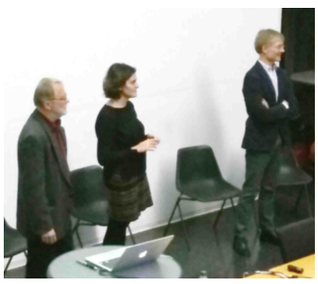
16. Continuing education experience in Hirslanden

(R. Simmler)

They find themselves in a situation very close to a public multi-site institution. They had to identify the needs and get to know many different people.

E-Learning is a good concept because the number of people involved is very important and the workload (multi-site + multi-local teams) is clearly impossible to cover. It makes possible to bridge the very large differences in level in the teams. This creates a homogenization of knowledge (upwards).

17. Round table discussion



To cover the risk that an employee will not be trained correctly, it is necessary to include in the contract the commitment that the employee will do what is necessary to be sufficiently trained

E-Learning is a good solution, but not alone. Some levels and courses require a face-to-face meeting to bring the situation under control (adaptation to the audience + visit at the workplace to see where improvements can be made).

I was really impressed by the speakers and can go home with a lot of new ideas to think about.
Thanks to all of them!

Pierre-Alain Tercier,
Hôpital Cantonal Fribourg

The ProKnow World Planning Challenge of 2019 …

The Call

Pro(found)Know(ledge) Labs (Florida, USA), creator of a cloud-based PACS for Radiation Therapy (https://proknowsystems.com), launched on 8th of August yet another worldwide Treatment Planning challenge, following the very first one that took place in March 2018. Medical physicists, dosimetrists and radio-oncologists were called to prove their ability and efficiency in the clinical practice.

The challenge took place over a 24h period between 9th-10th of September (to allow participants from every parallel and time zone of the globe to attend it at a reasonable time), and consisted of:

- o Downloading a CT image and a partial structure set;
- o Contouring 6 missing structures (unknown till the time of the challenge);
- o Optimizing a treatment plan and iterating the optimization to improve the plan's score, yet fulfilling plan practicality criteria and … keeping in mind that **efficiency (i.e. time) would count**!

The rules of the game

The treatment site was announced on 22nd of August to be H&N. Nevertheless, the dose objectives (integrating metrics from 3 different clinical trial protocols) would be revealed only at the official start of the event. As contouring skills were also evaluated, teams of up to 2 people were allowed, foreseeing medical physicists to pair a dosimetrist or a physician.

Only modern beam models and dose algorithms (i.e. pencil beam forbidden) already implemented in the clinic were allowed (i.e. non-clinically or non-commercially available TPS forbidden).

Many skills were under evaluation and a composite scoring method was set up to take all of them into account fairly:

- o Plan quality was evaluated based on metrics from both the user-contoured structure set and a "gold" structure set;
- o Contouring accuracy on 2 out of the 6 missing structures from the received set;
- o Efficiency, as elapsed time between downloading the user-unique patient dataset and uploading the final DICOM object back on the cloud.

I take it that as medical physicists used to working in the clinic, we all believe that a wonderful and perfectly conformal dose distribution is totally useless if it's unpractical. And indeed clear practicality guidelines had to be fulfilled on the maximum permitted number of arcs (4) or IMRT fields (9), on the maximum permitted energy (10MV) and on the beam entrances (shoulders must be avoided).

What was at "stake"

Money of course …. Three awards for the plans with the highest composite scores and also meeting the practicality guidelines, were sponsored by Radiological Technology University (RTU).

But!
The "stake" for which we care the most is not the money, it's the **GLORY**!
In fact, among the participants probably coming from all over the most amusing and exotic places in the world, it was a medical physicist paired to a physician from the quiet and *gemütlich* area of St. Gallen with its green hills dotted with cows and yellow flowers, to be awarded with the 1st prize!

Yes, we can shout it out loud, along with the sound of horns and jodel, **Simon Heinze** & **Markus Glatzer** are two of us!
A video with the announcement of results and awards can be found here: https://proknow.com/news/world-championships/2019-world-championship-results-and-awards/.

Overall Place	Name(s) and Institution	Composite Score
1	**Simon Heinze, Medical Physicist SSRMP** **Dr. Markus Glatzer, Attending Physician** Kantonsspital St.Gallen Switzerland	92.96
2	**Richard "Able" Shores III, MS, DABR, CMD** Prisma Health, South Carolina United States	92.92
3	**Tso Gary Ka Yu** St. Teresa's Hospital Hong Kong	92.88

Winners of the three plans with the highest composite score (last column on the right)

... and the interview with the winner

1. **How did you hear about the competition and what pushed you to challenge yourself into it?**

In February, ProKnow announced in their newsletter that a world championship of treatment planning was scheduled for the year 2019. When the exact date for the event was announced in August this year, it was clear to participate again, after having achieved the best treatment plan in the category "Tomotherapy" last year.

2. **Have you taken part before in other plan challenges? If so, what made this more attractive than others?**

Since 2016, I have participated in various plan challenges. In those planning competitions, however, the time involved in the planning played a subordinate role. The fact that, in addition to efficiency, for the first time contouring was also included in the evaluation, presented the ProKnow competition as a particularly demanding challenge. For me, it was definitely by far the toughest plan challenge.

3. **Are medical physicists regularly involved in treatment planning in your department?**

In our department, I am primarily involved in tomotherapy and SBRT/SRS planning for our TrueBeam treatment machines. However, in times of high workload, I also plan normal-fractionated VMAT techniques.

4. **How many years have you been planning? How many H&N cases do you think (order of magnitude) to have planned so far?**

My experience in radiation therapy planning accounts for about 10 years. I started my education in Neubrandenburg (Germany) in 2010. During that time I planned the first H&N cases without IMRT, yet. In our department in St. Gallen routine planning of H&N cases relies on sophisticated treatment techniques, especially on highly modulated VMAT radiation techniques. I can't say how many H&N cases I planned until now. In my opinion, it is highly important to understand the operation of the TPS in general.

5. Did you train in advance for it?

As far as planning is concerned, no. The only considerations I made in advance were about an efficient contouring and planning process including the time scheduling. As an example, the time window for planning was 24 hours at a max from the download of the image data. I decided to start planning in the late afternoon after routine patient treatment.

6. What kind of technique did you use (VMAT, IMRT, others..)?

This year, I decided for a VMAT plan. But I think that tomotherapy could also achieve very good results.

7. Did you use Eclipse? If so, did you make use of RapidPlan (was that allowed)?

Yes, the plan was calculated with Eclipse. RapidPlan was not explicitly excluded. However, the plan specifications were too specific for a standard model to offer an advantage. Also, in terms of time savings, I think the advantage would have been very limited or non-existent, considering that the plan was set up while the missing OARs were contoured.

8. Could we say that the winning plan is representative of a typical H&N plan in your department?

Our departmental constraints differ in some aspects from those in the competition. Therefore, I adjusted the plan to the specified constraints. With respect to the technique, the evaluated plan would be clinically acceptable. In the competition, I used an extra arc in addition to the two-arcs-technique mainly applied in our department. In our daily routine, I use this technique as well if our constraints could otherwise not be met.

9. A very pragmatic question: would the winning plan be actually deliverable, i.e. would it pass QA?

Absolutely. Due to the time limit of 4 h (for a maximum rating) for the whole planning, the resulting plan is not modulated higher than in clinical practice. I have performed an EPID verification and the results were very good. In the end, there are patient plans that require more planning time than was available in this competition.

10. **Contouring OARs was part of the challenge too, and a radiation oncologist did it. Was that a one-time collaboration or is OAR contouring a usual MD task?**

Most OARs, with few exceptions, are contoured by one of our physicians. The collaboration between physicians and medical physicists is very intense in St. Gallen. In the daily routine, target volumes, planning techniques and various patient plans are discussed together.

11. **How did you manage to get the best balance speed-effectiveness?**

It was my goal to submit the best plan possible within the first 4 hours in order not to get a point reduction for suboptimal efficiency.

12. **Did you get access to the metrics used to compare the plans? If so, were there features that are not yet commercially available and you found particularly useful and smart?**

The plans could be evaluated during the event on the ProKnowDS platform, based on the plan specifications. This allows a quick overview of the objectives that have not yet been met or where the scoring is reduced. For clinical daily routine I could identify only a small benefit. Because it is already evident during the planning process, if or where the constraints cause a conflict. Then, you have to decide individually for each patient how to interpret these deviations.

13. **Any comments about the competition itself? (i.e. scoring goals, learning experience, was it fun? did you get in touch with other participants?)**

As already mentioned, the competition was very tough. The time schedule as well as most of the planning criteria were meaningful to simulate a clinical case. The short planning time makes the learning effect relatively small compared to other competitions because you have only a few or no possibilities to try different settings. Of course, such a comparison with other planners is "fun" - especially if you get a good result in the end. In the same way, it is also important to exchange experiences with other participants after such a plan challenge.

14. **Would you encourage others to try it?**

Definitely. However, you can learn even more about your own planning system if the planning time is not limited. After almost 10 years of planning, I am still learning small details for a better understanding of the TPS. In a challenge like this, you can compare yourself with other top planners.

Simon Heinze,
Kantonsspital St. Gallen

Medical Physics on the Ride

Summary:

Input - four enthusiastic road bikers with their "velos", gpx file for a tour around lower Lake Constance with 86 km length and 1'076 m inclination.

Output - 98 km and 1185 m inclination; nice views over various landscapes, ventilated brains; heavy legs.

Background

Everything started about five years ago, when a rough idea to do something like this in a late summer was born and discussed for the first time. Over the years several attempts were undertaken, but due to several serious reasons (weather, absences, weather...) never succeeded.

2019 changed everything: four medical physicists and one service engineer (adopted by the physicist) of mixed age and fitness levels agreed to meet in the morning of the 23rd of September at the train station of Kreuzlingen to ride around lower Lake Constance. Unfortunately the service engineer had to quit as his bike was stolen before.

As a lake shore is quite flat by nature, we decided not to make things unnecessary easy and added almost all available hills standing around the lake to the tour. This strategy promised nice views of the lake, challenging climbs and fast and/or furious downhill stages.

Description

The weather turned out to be a little bit cool, but dry. One of us returned the afternoon before from ASTRO in Chicago and claimed to be jet lagged. The differences in fitness were considerable. As the average traveling speed for this "insieme" event was 25 km/h, some of us experienced a very relaxed tour, other(s) became quite challenged.

A special experience was a photo shooting standing on the bridge over the river Rhine in Stein am Rhein, when

two female Asian tourists wanted to get a photo of them, the bridge, the city and … four sweating road bikers surrounding them(!) Apparently, we became part of a typical touristic Swiss/European ensemble containing history, nature, sports and a maybe (?) a little bit of craziness.
As always, the tour turned out to be substantially longer (length and inclination) than planned with an ambitious tracking software. Nevertheless, after a coffee break in Radolfzell everybody was delayed but luckily able to return to his family in the afternoon. And just one hour later, the author was able to properly climb again the stairs at home.

Outlook

There is the idea to repeat this event in 2020, but to move to another (more central) spot in Switzerland. Other interested colleagues are warmly welcome and can contact the author.

Supplemental material just a click apart:
https://www.relive.cc/view/v4OGmmLdp5q
https://strava.app.link/w07U8vDMg0

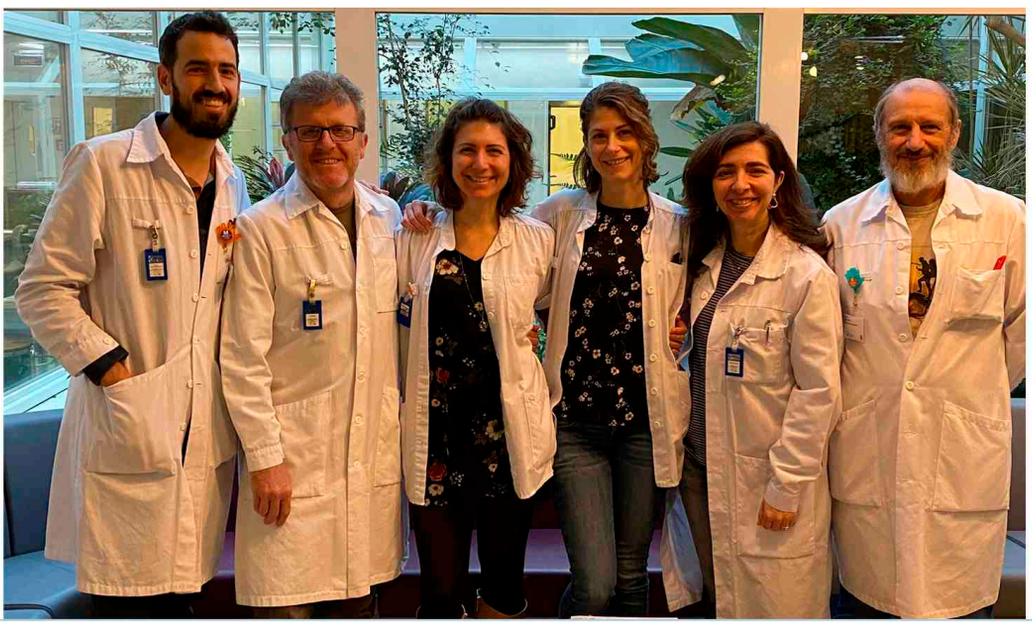
Jan Hrbacek, Jérôme Krayenbühl, Tony Lomax and Stephan Klöck
(organizer and author, stephan.kloeck@gmail.com)

Hôpitaux Universitaires de Genève

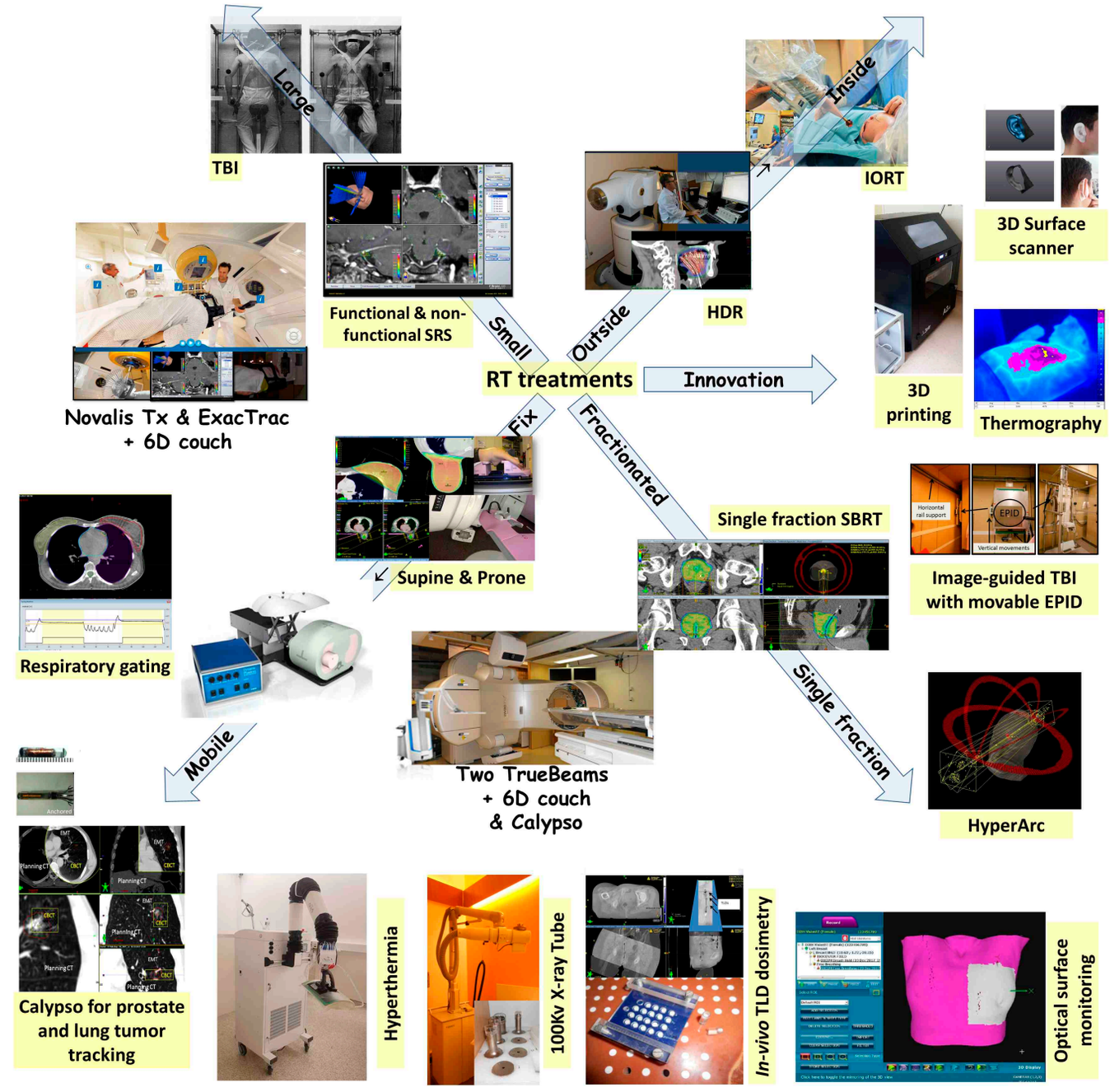
Hôpitaux Universitaires Genève

Radiation-Oncology
Head of Department
Prof. P. Tsoutsou

Physics team at HUG RT: who we are, what we do!



Left to right: KOUTSOUVELIS Nikolaos, NOUET Philippe, MARZIN Angèle, JACCARD Maud, DIPASQUALE Giovanna, ROUZAUD Michel.



Giovanna di Pasquale,
HUG, Genève

"Welcome!"

Aristotelis Spyridonidis

"*Light curves by an asteroid…*".That was my undergraduate thesis in 2012 at Aristotle University of Thessaloniki and simultaneously the inspiration to begin all kinds of simulations.
The next step was my introduction with Mr. "Monte Carlo" at Swansea University in Wales, where I did my master in 2014, in Medical Radiation Physics. Upon completion, I started my clinical training in Theagenion Cancer Hospital of Thessaloniki, where I obtained my professional certification in medical physics in Greece in 2016.

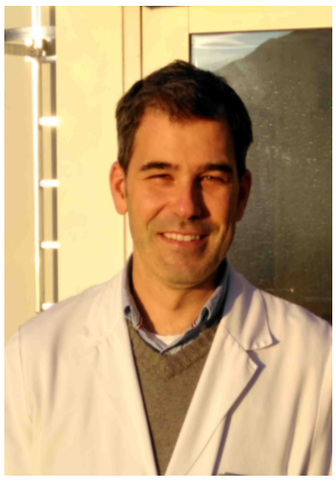
My journey and ambitions then took me to Dublin in Ireland where I joined the CAMPEP residency program at St. Luke's Radiation Oncology Network. There, due to many triggers from the demanding training competencies, I had even more fun with Monte Carlo simulations for external beam dosimetry, detector design, brachytherapy and bunker shielding. I found particularly challenging having to experimentally verify the results from simulations and very satisfying to be involved in the commissioning of a Monte Carlo–based commercial TPS model dedicated to the treatment of multiple metastases.

Upon successful completion of the CAMPEP residency this year, my winter ambitions led me to accept a job offer at the institute of radiation oncology at Kantonsspital Graubünden and start a new life in Chur and in the mountains of Graubünden.

Aristotelis Spyridonidis
Kantonsspital Graubünden, Chur

"Welcome!"

Martin Hillbrand



At around the turn of the century – and yes indeed it feels like a long time ago – I studied physics at the Vienna University of Technology to obtain a Master's degree in 2004. At first I spent some time in theoretical physics for my Master studies and then I started with a PhD project at the Vienna Medical University. My field of interest was (and remained for more than a decade) to investigate the dosimetric benefits from proton beams used in radiotherapy. The department of Radiation Oncology and its division of medical radiation physics was a great and supportive place to do so!

In 2008, I was part of a team setting up a brand new Radiotherapy department from the green field in Vöcklabruck, a lovely spot in Upper Austria with a combination of mountains and lakesides where others choose to spend their holidays. By the end of that year I achieved board certification by the Austrian Society of Medical Physics (ÖGMP).

However, after only two and a half years in 2010, the focus of my professional activities returned to protons when I moved to Bavaria in Germany, as deputy head of medical physics at the Rinecker Proton Therapy Centre. The following nine years were truly filled with interesting work.

Finally, in November 2019 I took the opportunity to move somehow back to my roots and started a new position in radiation oncology at the Kantonsspital Graubünden in Chur. My hometown Feldkirch is not far away, but next to the Swiss border. The team at the institute of radiation oncology at KSGR is very international, highly motivated and keen to push the frontiers of radiotherapy and related technologies forward. I am now delighted to be a member of this team!

Martin Hillbrand
Kantonsspital Graubünden, Chur

“People on the move”

Olivier Pisaturo

After 8 wonderful years in the Radiation Oncology department at the *HFR-Hôpital fribourgeois*, I decided it was time I took a new challenge by joining the *Service Interdisciplinaire de Cancérologie* at the *HRC-Hôpital Riviera Chablais*.

I started working in Fribourg in 2011. The department was going through a radical change, with the arrival of two Varian Truebeams and a Tomotherapy HD (the first in Switzerland!). Working with these cutting edge machines was a great experience that also resulted in interesting research and development projects.
Before that, I got my master of science in Physics from the Swiss Federal Institute of Technology in Lausanne (EPFL) in 2005. Then I got my SSRMP certification in 2007 at the Institut de Radiophysique at CHUV in Lausanne, where I also completed my PhD in 2009. Finally, I worked there 3 more years as a senior medical physicist.

I would like to take this opportunity to thank my former colleagues for making my Fribourg experience so pleasant and full of fascinating discussions. I will surely miss them a lot. I also send my best wishes to my successor.
In the meantime, I am looking forward to working with my new colleagues, in the splendid new hospital in Rennaz. I am sure we will work well together, as well as learn a lot with the MR-linac!

Olivier Pisaturo,
HRC - Hôpital Riviera Chablais
Service Interdisciplinaire de Cancérologie
olivier.pisaturo@hopitalrivierachablais.ch

Editorial staff and Information

Impressum

Editors

Francesca Belosi
Proton Therapy Center
Paul Scherrer Institut
5232 Villigen
056 310 37 45
francesca.belosi@psi.ch

Nathan Corradini
Clinica Luganese
Centro di Radioterapia
6900 Lugano
091 960 81 28
nathan.corradini@clinicaluganese.ch

Shelley Bulling
Centre d'Oncologie des Eaux-Vives
26 rue Maunoir
1207 Genève
022 319 77 30
sbulling@eaux-vives.com

Jean-Yves Ray
Service de radio-oncologie
Hôpital de Sion
Av. Grand-Champsec 80
1951 Sion
027 603 45 12
jean-yves.ray@hopitalvs.ch

Web Editor

Jean-Yves Ray
Service de radio-oncologie
Hôpital de Sion
Av. Grand-Champsec 80
1951 Sion
027 603 45 12
jean-yves.ray@hopitalvs.ch

SSRMP Secretary

Roman Menz
Radiologische Physik
Universitätsspital Basel
Petersgraben 4
4031 Basel
roman.menz@usb.ch

Publisher

Schweizerische Gesellschaft
für Strahlenbiologie
und Medizinische Physik
(SGSMP/SSRPM/SSRFM)

Printing Press

Valmedia AG
Pomonastrasse 12
CH-3930 Visp
www.mengisgruppe.ch

Call for Authors

Also, you are invited to participate in the construction of our bulletins. Of desirability are all contributions that could be of interest to members of our society, such as

- Reports of conferences, working group meetings, seminars, etc.
- 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 a MS Word document via email to one of the editor addresses above.

Deadline for submissions to Bulletin No. 97 (01/2020): 03.2020

SSRMP Board

Board members

Prof.	**Michael Fix** President michael.fix@insel.ch	Abteilung für Medizinische Strahlenphysik Inselspital - Universität Bern 3010 Bern	031 632 21 19 031 632 24 29 031 632 21 11 031 632 26 76
PD MER Dr.	**Raphaël Moeckli** Vice President Chair Science Committee raphael.moeckli@chuv.ch	Inst. Univ. de Radiophysique (IRA) Rue du Grand-Pré 1 1007 Lausanne	021 314 46 18 021 314 80 68 021 314 46 01
Dr. phil. II.	**Roman Menz** Secretary roman.menz@usb.ch	Radiologische Physik Universitätsspital Basel Petersgraben 4 4031 Basel	061 328 73 14
MSc.	**Regina Seiler** Treasurer Chair Education Committee regina.seiler@luks.ch	Radio-Onkologie Luzerner Kantonsspital Spitalstrasse 6000 Luzern 16	041 205 58 07 041 205 58 11
MSc.	**Jean-Yves Ray** Chair Professional Affairs jean-yves.ray@hopitalvs.ch	Service de radio-oncologie Hôpital de Sion Av. Grand-Champsec 80 1951 Sion	027 603 45 12 027 603 45 00
MSc.	**Yvonne Käser** yvonne.kaeser@physmed.ch	PhysMed Consulting GmbH Kleindorfstrasse 12a 8707 Uetikon a. S.	079 453 99 02
Dr. sc. nat.	**Stefano Gianolini** stefano.gianolini@hirslanden.ch	Hirslanden AG Corporate Office Boulevard Lilienthal 2 8152 Glattpark	044 388 63 80 076 747 00 72
Dr. med.	**Markus Notter** markus.notter@lindenhofgruppe.ch	Radioonkologie Lindenhofspital Bremgartenstr. 117 3001 Bern	031 300 95 11 031 300 88 11 031 300 86 99
Dr.	**Stefano Presilla** stefano.presilla@eoc.ch	Ente Ospedale Cantonale Servizio di Fisica Medica Viale Officina 3 6501 Bellinzona	091 811 91 84

Conference Calendar

CALENDAR 2020

March 4
Bern
Winter School “Dosimetry Guided Treatment Planning for Radionuclide Therapy”
March 4 - March 6
https://ssrpm.ch/event/

March 8
Pichl, AT
Winterschule Pichl für Medizinische Physik 2020
March 8 - March 20
http://www.winterschule-pichl.de/

March 9
München, DE
5th Conference on Small Animal Precision Image-guided Radiotherapy
March 9 - March 11
https://www.dgmp.de/de-DE/45/veranstaltungskalender//827/5th-Conference-on-Small-Animal-Precision-Image-guided-Radiotherapy/

March 11
Wien, AT
ECR 2020 European Congress of Radiology
March 11 - March 15
https://www.myesr.org/congress/

April 3
Wien, AT
ESTRO 2020
April 3 - April 7
https://www.estro.org/Congresses/ESTRO-2020/ESTRO-2020/

April 15
Geneva
ELCC 2020 - European Lung Cancer Congress
April 15 - April 18
https://www.estro.org/Congresses/Joint-scientific-collaboration-events/ELCC-2020-European-Lung-Cancer-Congress/

May 9
Linkou, Taiwan
Particle Therapy Co-Operative Group
May 9 - May 14
http://www.ptcog59.org/

May 25
Heidelberg, DE
8th MR in RT symposium
May 25 - May 27
https://www.dkfz.de/en/medphys/MRinRTHD2020/MRinRTHD2020.html/

June 8
Portland, OR, USA
AAPM summer school 2020
June 8 - June 12
https://w3.aapm.org/meetings/2020SS/index.php

June 18
Fribourg
SCR 20 – Swiss Congress of Radiology
June 18 - June 20
http://www.radiologiekongress.ch/

July 12
Vancouver BC
Joint AAPM/COMP Meeting
July 12 - July 16
https://www.aapm.org/announcements/2020AMRFP.asp/

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!