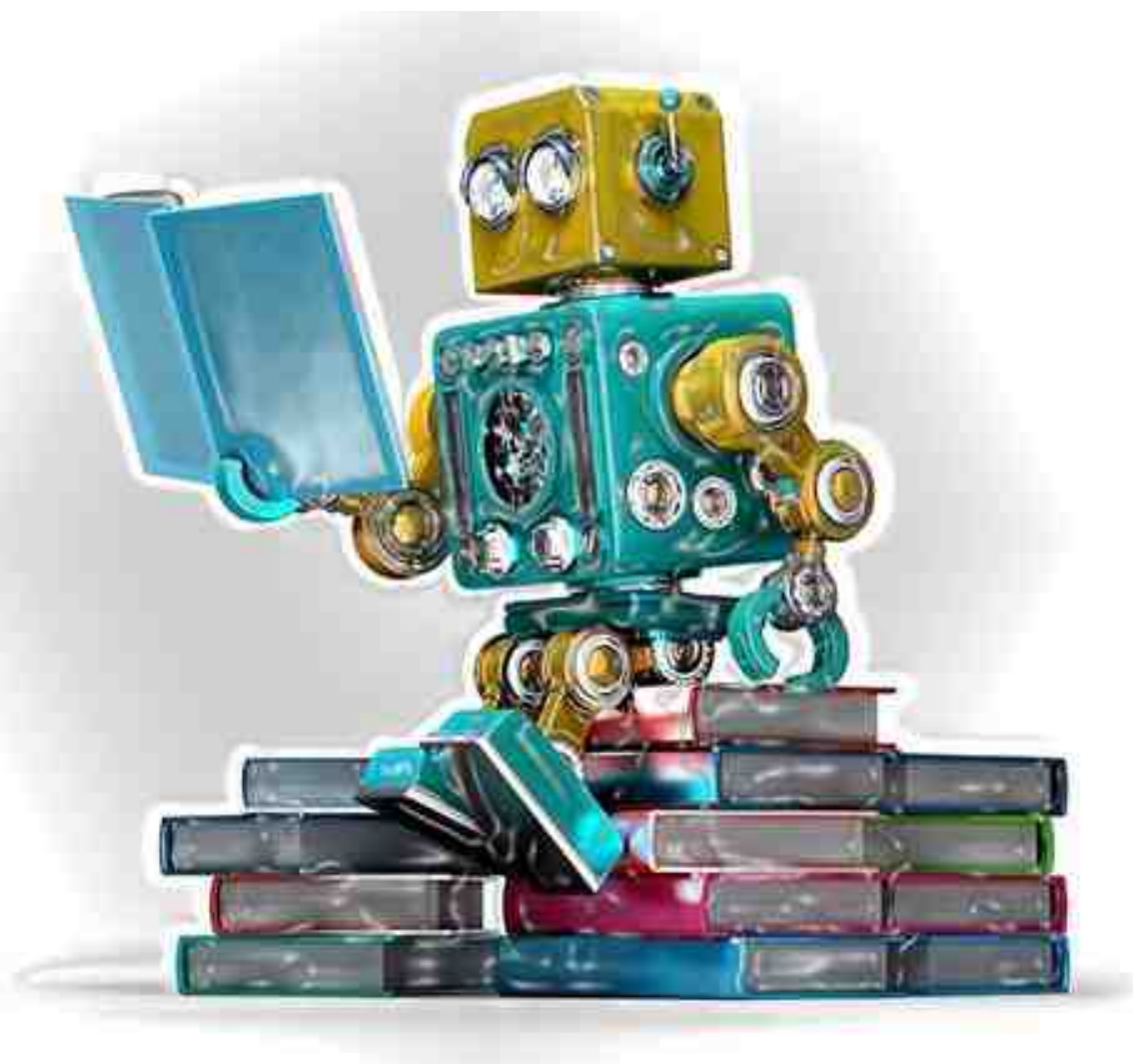


# BULLETIN

December 2018



*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 93 [www.ssrpm.ch](http://www.ssrpm.ch)

## Letter from the Editors



Dear SSRMP members,

This issue is already packed full of interesting things, therefore I will try to be brief.

First things first: I would like to deeply thank all of you who, spontaneously, or because we contacted you, contributed to the Bulletin with reports, articles, pictures and personal resumes, as well as all the board members for enduring our insistent reminders for handing in their expected reports on time. The strenuous commitment of the board to the interests of SSRMP includes a lot of time spent reporting back to us about the main decisions, steps and projects that they have been working on throughout the year, and which affect our profession of medical physics. I would like to heartily thank Jean-Yves, Shelley and Nathan for supporting the Bulletin editions with English revisions, for seeking new contributions, and for all the precious advices! We all live and work in different cantons, and, well ... you know... long distance relationships are not always easy to manage.

Without your help there would not be much content to publish, and the SSRMP Bulletin would not be such a portrait of all the different professions, personalities, and passions which characterize our society.

Secondly, what will you find in this issue?

The SSRMP News section makes up most of this edition. As is traditional, it includes the yearly

reports from the committee chairs - and here we have to warmly welcome Prof Michael Fix as new President of our society! - , the results of the TLD inter-comparison, various prize announcements, and the research grant announcement for next year. A highlight of this section is the recent and very welcome news that the ROP2MMP working group has released recommendations for preparing the quality handbooks that are required by the new Radiation Protection Ordinance. These documents will be a huge help for every department. Other good news of special interest is the announcement of the Swiss radiology society meeting - SCR 2019 - which will take place in St. Gallen next June with SSRMP as participating society.

Interesting resumes from the AAPM meeting, Winterschule Pichl, the National Day on Radiation Protection and the European Congress of Medical Physics 2018 animate the Issues of Interest session. The Personalia, SpotLightOn and PhD Platform will give you the opportunity to meet new people or discover the story and skills of colleagues that you might already know. Personally, it has been a pleasure for me to meet and get to know some of these people at the Annual Meeting in Lausanne.

Enjoy reading and best wishes for a Merry Christmas and Happy New Year.

Francesca Belosi,  
On behalf of the Editorial Team.

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Cover Image: Inteligência artificial é capaz de criar arte como humanos?

- EXAME - <https://exame.abril.com.br/tecnologia/inteligencia-artificial-e-capaz-de-criar-arte-como-humanos/>

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## PRESIDENT'S LETTER



Dear colleagues,

I welcome you to my first letter from the president, which feels unusual to me, as my last letter I wrote seems to be 20 years (at least) in the past. Nevertheless, I will write a few lines to all of you. Just a few weeks ago at the general assembly you have elected me to be your new president. This is a great honor for me and I would like to thank you all for your trust and confidence.

When there was the first sign on the horizon about being a candidate for the new president, I could not imagine that it will become real at all. It needed some time to let this idea settle in and thinking that I am in the society so long and was benefiting so much that it might be natural to give something back. To make the long story short, switching perspectives and re-thinking new ideas popping up lead sometimes to a change in mind. In this sense, I would like to welcome you being with me in switching perspectives, re-thinking tasks and give new

ideas a chance. I am sure this will make a difference for the future of our community and society.

At this point I would like to greatly thank the previous president Peter Manser for his outstanding and successful engagement for our society. He was able to manage challenges in a unique manner. What I want to say is that it will be impossible for me to fill the gap he is leaving behind as president. All I can offer is doing my best and most likely it will be different. Additionally, I would like to thank also the previous board members for their great work and effort spent for our society, as mentioned at the last general assembly. I highly appreciate that most of them are still in the board and I fully count on their support and experience, since I am not just the new president, I am also new to the board. A jumpstart so to speak. This is not my first jumpstart. There have been some successful others...



## PRESIDENT'S LETTER

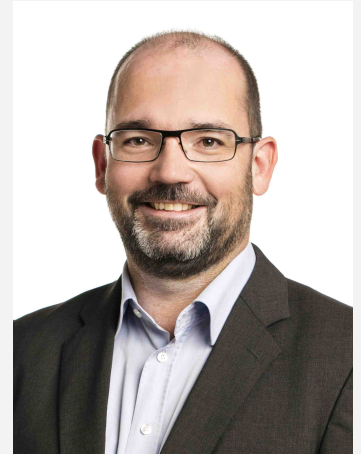


Looking back to the recent annual meeting, I was very pleased about the broad scope of topics being presented and the great quality of the presentations. Thanks to the local organizer Raphaël Moeckli and his team, who put an outstanding program together, which was also very inspiring. Thus, I would like to welcome you in taking some inspiration from the presented topics, which might lead to new little projects to be presented at our next annual meeting at PSI in November 2019. I am looking forward to contributions from all the different areas of radiobiology and medical physics in our society. Maybe it could be a project suitable to apply for the research grant from SSRMP or to take the opportunity and collaborate with colleagues. In this context Thomas Bortfeld mentioned in his laureate, when awarded with the Glockner medal at this year's DGMP annual meeting: "ask provocative questions and look for research in the Pasteur's quadrant."

Finally, I would like to welcome you to actively engage yourself in our society. There are many different ways to be active and provide your personal support. One possibility is already mentioned above, by participating to our annual meeting. But there are many other possibilities like in participating in one of the working groups, as an author of a contribution to the bulletin etc. Just be creative. With this I look forward to an exciting and interesting time ahead of us.

Michael K Fix  
Bern, 14.12.2018

# PRESIDENT'S ANNUAL REPORT 2018



Dear colleagues,

While looking back to 2018, I start recognizing that this will be my last president's annual report, which hurts a little bit and is associated with the realization that the four years were just over so quickly. I remember very well the Dreiländtergagung in 2014 in Zurich, where I was elected for president the first time. Soon afterwards, we were celebrating the 50st anniversary of SSRMP in Luzern and ... and now, we are in 2018 in Lausanne. Let's put the emotions aside and let's focus on facts and figures.

About one year ago, we had our last general assembly on the occasion of a continuous education day in Solothurn. I would like to take the opportunity to thank Norbert Klippel and Raphaël Moeckli for making this happen. It was a very interesting day with distinguished speakers talking about deformable image registration and its potentials and challenges in radiation therapy. I also would like to mention two of our honorary members, Léon André and Wolf Seelentag, who were joining this event and who were reporting about their current activities as medical physicists. Very fascinating to see that there is still physics, even medical physics, in their daily lives and I am sure that they serve as good examples for all of us.

During the last year, we had 6 board meetings and discussed several topics. I provide a summary by the following keyword list:

- Two AMP meetings (Dec 2017, Jun 2018)
- Actively supporting SSRMP working groups
- Two meetings with BAG (Mar 2018, Nov 2018)
- Collaborations with other societies like SRO, SGR, SASRO, DGMP, OEGMP, EFOMP, etc.
- Research grant
- Varian prize
- Annual meeting in Lausanne, 22.-23.11.2018

The board dealt with many different aspects and communicated them also at the occasion of the AMP meetings. Among others, I want to pick up the topic of collaboration with partners and want to emphasize that we succeeded for instance in being able to support the society of radiology in organizing their annual meeting. To me, this was a big highlight over the last year, and I look forward to the SCR'19 meeting in St. Gallen, next June. Furthermore, we also could strengthen our network with DGMP and OEGMP. In this context, we discussed topics around "Zeitschrift für Medizinische Physik" (ZMP), which now is also known as Journal of Medical Physics. Moreover, the jointly organized Winterschule in Pichl (A) was celebrating its 30st anniversary and

# PRESIDENT'S ANNUAL REPORT 2018

different persons from SSRMP were involved in different discussions about that. Peter Pemler acts as “Kurator” in the associated “Kuratorium” and I would like to thank him for his engagement and commitment to this.

Detailed information about the SSRMP activities can also be found in the corresponding reports from the permanent chairs. This gives me the opportunity to thank them for their tremendous work all over the last years. Jean-Yves Ray (professional affairs), Raphaël Moeckli (science), and Frédéric Corminboeuf (education) are heavily involved and available all the time. It's a real pleasure collaborating with all of them. To me, over the last years, we could realize and keep a high level of trust and confidence, which makes it easy to discuss with each other and to share ideas and find solutions. Many thanks to you for this!

More generally, it's all but obvious that the board members are perfectly collaborating during all the meetings and I am more than glad to see that all the board members are not just accomplishing a given task but are personally involved and actually always touched under their skins when SSRMP related issues pop up. This kind of natural involvement is needed for a society like SSRMP. It's a society, which is too small to be fully professional. But on the other side, it is too big to be handled just by joining a meeting without any interaction. It's like in particle physics: you need enough energy and momentum in order to dig into the deep and to discover concrete answers, which are not only satisfying current needs but are also relevant for the future.

In the general assembly 2017, we had some statutes changes, which were mainly initiated by administrative purposes and communication strategies. This had some impacts on financial

reporting and budget proposals, since the “Geschäftsjahr” is now starting on 1<sup>st</sup> of July. For sure, Regina Seiler deserves my deepest gratitude for all her activities and efforts as treasurer of SSRMP. She is simply doing a great job in this field and SSRMP members can be proud to have her in this position. Roman Menz acts as secretary for 2 years, now, and I am also thankful for having him on stage and organizing all the tasks related to administrative work.

I also want to express my appreciation to Yvonne Käser and Stefano Presilla, who both support the board in a more general manner. While Yvonne is representing SSRMP in the recently installed steering committee of clinical audits, Stefano is greatly involved in the professional affairs committee and thus is in charge of organizing the salary surveys. In addition, I would like to thank Markus Notter: although not able to participate personally in all of our board meetings, Markus is always on board when needed and gives input “from aside”. This perspective is very helpful, and to my experience from the last 10 years, it is a key element for succeeding as SSRMP board. To all of you: Many thanks as well!

Finally, I would like to thank all the supporting persons, which are active in the field and contribute to the success of SSRMP. There are too many people to mention by name, but I think of hard-working people in the working groups, bulletin editors, bulletin authors, speakers, lecturers, supervisors, mentors, authors, editors, reviewers, delegates, exam experts, auditors. All of you are needed and to all of you I express my sincere gratitude. I am sure that the new board, in particular the new president, will need your support also in the future.

Peter Manser  
Bern, 21.11.18

# PROFESSIONAL AFFAIRS

## Professional Affairs Committee Annual Report 2018

This year I would like to start my report with the achievements of the Bulletin team. Thanks to their strong commitment for publishing three issues per year. The next issue, and the last one for this year, is currently under preparation. The job can sometimes be frustrating, but when we receive the Bulletin in the mail, we hope that you share with us our satisfaction. So, let's congratulate them: Francesca Belosi, Shelley Bulling and Nathan Corradini. Francesca is the heart of the team, creative and always very enthusiastic. She has introduced a series of articles and PhD interviews following the earlier Spotlight On introduced by Nathan. We haven't had much feedback from members and it would be nice to hear from you, the readers. Anyway, we thank all of you who have contributed to the Bulletin with an article or more and encourage the others among you who haven't yet.



In between the Bulletin issues, it is our aim to provide you with useful professional information on the website. Unfortunately, our resources are too limited to propose an exhaustive content. We would appreciate your suggestions for content that would be useful or interesting for our community. We fell short of our objectives for developing the website this year.

You may have noticed that the website now hosts the annual meeting web pages and that online registration was possible via a contact form. We will save future congress organizers a lot of work by providing the same service every year. Next year, we aim to develop a non-public area with dedicated content for members only.

The board started an evaluation of how to update the SSRMP mailing list. A new newsletter tool is expected. However, the recent EU legislation on data protection makes managing a professional association website like ours more complicated now. Should we strictly implement all the requirements? For your information, the SSRMP only uses your personal contact information to inform you about their activities and never for any commercial purpose. Should we request your full agreement (opt in) for every use of your data? I would appreciate your comments about these privacy issues in my role as SSRMP Webmaster.

At the last AGM, I reported that the professional affairs committee would follow EFOMP activities more closely. Our delegates participated in the Council meeting and the scientific congress in Copenhagen. The committee was particularly interested in the recently published policy 16 on the role of the medical physicist following the introduction of the European BSS revision. As recommended in the policy 16, the board is working on an adaptation that could be implemented within the framework of SSRMP. We will run a consultation process if that project comes to reality.

## PROFESSIONAL AFFAIRS

The committee continued its collaboration with the Swiss Society of Radiology under the leadership of Roman Menz. We focused this year on improving the conditions for your scientific participation in the Swiss congress of radiology. In addition to having arranged reasonable registration fees, we will now organize a few joint sessions at the 2019 congress. Therefore, we hope that you will take this opportunity to submit your abstracts. Check the dates.

Raphaël Moeckli led the project to make the job of medical physicist a recognized profession by “law”. Several discussions with the BAG lawyers and representatives of ETH demonstrated that there was not much interest from the key institutions that were earlier seen as potential promoters. The project was paused by the board.

Let me finish with warm thanks to my committee team.

On behalf of the committee for professional affairs,

Jean-Yves Ray  
November 22<sup>nd</sup>, 2018



# PROFESSIONAL AFFAIRS

## Recommendations for Quality Handbooks

As announced in the SSRMP Bulletin Issue 90 a new Working Group was launched in August 2017, with the aim of dealing with the implementation of the new Radiation Protection Ordinance (RPO), published in April 2017 and officially active since 1<sup>st</sup> of January 2018, into Medical Physics Practice (MPP). The working group is named RPO2MPP and over the first year of its existence, its members prioritized three main topics: clinical audits, continued education in radiation protection and dose documentation in IGRT. One of them tackles the Art 43 of the new RPO, which establishes clinical audits as peer review procedure on a national level. During a clinical audit, the audited institution must be able to present a Quality Hand Book (QHB).

Over the last year the RPO2MPP group has worked for providing a recommendation for centers using radiation for medical purposes (diagnostic and therapeutic) that can be used as guideline for the preparation of the QHB.

At one year of entering into force of the new RPO, the RPO2MPP WG presents to the medical physics community the recommendations for the QHB for CT (*Empfehlung zur Erstellung eines Qualitätshandbuchs für CT-Untersuchungen*) and Radiation Oncology (*Recommendation for the preparation of a quality handbook for radiation oncology*). A third document for Nuclear Medicine is under the final reviewing process. These recommendations should primarily ensure that when creating the QHB, none of the required content is overlooked. They are, therefore, structured in such a way that the individual chapters refer directly to the content mentioned in Article 43.

- The recommendation for CT was written as a part of the clinical audit expert committee for CT where radiologists, imaging technicians and medical physicists worked in very close collaboration. A first version of it was already available in 2015 and has now been revised to match the requirements of the new RPO, and was revised by the RPO2MPP working group. The present document was formally accepted by the boards of SGR, SVMTRA as well as SSRMP by fall 2018 and is now also part of the FOPH's official clinical audit documentation.
- The RO recommendation was mainly written by medical physicists members of the RPO2MPP group, but members of SRO and SVMTRA were also heavily involved. The boards of the three societies SSRMP, SRO and SVMTRA approved the recommendation between Summer and Autumn 2018.

We are extremely thankful to all contributors for the time and effort invested in preparing and reviewing these important documents that can serve as tools for supporting the medical physicists and license holders getting organized for the clinical audits.

The recommendations are now available in the SSRMP website: <http://ssrpm.ch/quality-handbooks/>.

On behalf of the RPO2MPP WG,  
Francesca Belosi and Yvonne Käser

# PROFESSIONAL AFFAIRS

## SSRMP Delegate on EFOMP Council Meeting

In August 25, I had the chance to replace our colleague Stefano Gianolini as Swiss delegate for the council meeting (CM) held in Copenhagen at the end of the ECMP 2018.

Over the evening before I had been thinking that it was going to be a very long day with unknown people talking on theoretical level about the federation. Fortunately, I was proved wrong!

The CM included of course the typical points of such a meeting, such as the approval of the previous meeting minutes and the economic balance, but also practical information for the medical physics experts (MPE).

The European school for MPE (ESMPE) will organize three courses in 2019:

- i. Nuclear Medicine Dosimetry, Practical approach, jointly organized by ESMPE and the European School of Multimodality Imaging & Therapy (ESMIT) (Prague, 24-26.01.2019)
- ii. State of the art and new trends of angiographic equipment: Image quality, patient and staff dosimetry (Prague, 04-06.06.2019)
- iii. Treatment planning systems (Warsaw, 10-12.10.2019).

Two AAPM reports are being prepared in collaboration with EFOMP, one on CT reporting (TG 246 in approval phase) and one on breast dosimetry (TG 282).

For professional matters, a publication on MPE recognition is expected in September 2018 in collaboration with IAEA.

EFOMP website will soon offer the possibility for online registration for EFOMP events as well as an e-learning platform with videos from EFOMP courses.

During the day, the committee chairpersons presented a summary of the activities of their group, followed by the delegates' presentations on their national societies and the topics that preoccupy them. In the end of the day, an excellent dinner allowed us to really meet and discuss about several subjects.

So, keep an eye on the EFOMP website as new information is coming up: [www.efomp.org](http://www.efomp.org)

And if you have the opportunity to participate to a council meeting, do not hesitate!

Elina Samara

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

-> Section "Delegates to other societies"

### 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 two of your delegates.

# PROFESSIONAL AFFAIRS

## SSRMP Delegate at Winterschule Pichl

Seit 2005 bin ich der Vertreter der SGSMP im Kuratorium der gemeinsamen Winterschule für Medizinphysik der drei Fachgesellschaften DGMP, SGSMP und ÖGMP. Seit der Gründung der Winterschule im Jahr 1993 durch unser Ehrenmitglied Prof. Bernhard Rassow (DGMP) und Frau Prof. Gertrude Keck (ÖGMP) ist die Schule deutschsprachig – auch wenn der ein oder andere Vortrag auch schon mal auf Englisch gehalten wird.

Die Aufgaben des Kurators sind vielfältig - allerdings kaum fachlicher Natur sondern meist administrativ. Jede Winterschule will gut vorbereitet sein. Zu Beginn meiner Tätigkeit haben wir die Winterschulen nicht innerhalb des Kuratoriums organisiert. Wir haben die fachlichen Themen für die Winterschule diskutiert, ausgewählt und geeignete Kursleiter angeschrieben. Die Organisation vor Ort musste dann vom Kursleiter übernommen werden. Gerne haben wir den gleichen Kursleiter auch mehrmals angefragt. Dann musste man die organisatorischen Stolpersteine nicht immer wieder neu erklären.



Im Laufe des letzten Jahrzehnts haben sich die Anforderungen an die Organisation der Winterschule erheblich verändert. Kuratoriumsmitglieder arbeiten seit jeher ehrenamtlich. Und für den Aufenthalt bei der Winterschule beziehe ich auch einen Teil meiner Ferientage. Auch Kursleiter und Referenten arbeiten unentgeltlich. Und Referenten auch. Durch die stetig steigenden Teilnehmerzahlen ist auch der organisatorische Aufwand enorm gestiegen und kaum ein Kursleiter ist mehr in der Lage neben der fachlichen Vorbereitung auch noch die Organisation der Winterschule zu übernehmen.

Da war es naheliegend, dass die Organisation zentral vom Kuratorium übernommen wurde. Und auch wir als Kuratoren können den administrativen Aufwand nicht mehr mal eben so neben unseren beruflichen Verpflichtungen miterledigen.

Aus diesem Grund hat in den letzten Jahren die Geschäftsstelle der DGMP dankenderweise fast alle administrativen Tätigkeiten wie die Verwaltung der Teilnehmer, die Einbindung der Firmen oder die Pflege der Homepage für uns übernommen.

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

-> Section "Delegates to other societies"

### Kennen Sie Ihren Delegierte?

Obwohl der Präsident der SSRMP der erste Vertreter der Gesellschaft ist, kann der Vorstand die Unterstützung zusätzlicher Delegierter benötigen.

Der Vorstand ernennt einen Delegierten formell als Vertreter einer anderen Gesellschaft oder eines Behördenorgans, das im Namen des SSRMP handelt.

Dieser Artikel beschreibt die Aufgaben eines Ihrer Delegierten.

## PROFESSIONAL AFFAIRS

Aber es bleiben auch so noch genügend Emails, die beantwortet und Probleme die gelöst werden müssen. Jeweils ein Kurator steht während dem gesamten Jahr einem Kursleiter als direkter Ansprechpartner zu Verfügung und versucht Fragen rasch zu beantworten und die Regeln, oder besser Gepflogenheiten, der Winterschule zu kommunizieren. Damit die Winterschule immer die Winterschule bleibt.



Inzwischen ist es, vielleicht hat der ein oder andere das schon bemerkt, eine Winterschule der DGMP mit „Unterstützung der SGSMP und der ÖGMP“. Nach wie vor wird die Winterschule jedoch durch ein internationales Kuratorium geleitet. Wichtig ist es, dass der Kurator immer die Fahne der Schweiz hochhält und die Interessen der SGSMP vertritt.

Vor Ort in Pichl entfaltet sich dann der Geist der Winterschule. Das Pichlmayrgut als Tagungsort, der Kontakt zu Referenten, Teilnehmern und Firmenvertretern lassen aus einer eher unattraktiv

wirkenden Hilfstätigkeit über das Jahr verteilt eine Tätigkeit mit interessanten fachlichen und wissenschaftlichen Austausch entstehen. Und das über die Ländergrenzen hinaus. Selbst nach 15 Jahren lernt man immer noch Neues und Spannendes und kann die Entwicklung unseres Fachgebietes spüren. Aber natürlich bleibt der Kurator auch in Pichl Mädchen für alles. Und zwischen den beiden Winterschulwochen findet regelmässig eine Sitzung des Kuratoriums statt, bei der die nächste Schule schon wieder vorbereitet wird. Mitten in der laufenden Winterschule ist eigentlich bereits vor der nächsten Winterschule.

Noch nie in Pichl gewesen? Dann wird's Zeit!



Tschau zäme, Servus beinand, Pfiats Eich, Auf Wiedersehen

Peter Pemler,  
Mitglied des Kuratoriums der DGMP/SGSMP/ÖGMP - Winterschule für Medizinphysik



# EDUCATION

## Education Committee Annual Report 2018

The committee for education still is and will be dealing with the tasks in connection with the certification in medical physics in Switzerland. That includes checking the entrance criteria for new candidates, assist them with their education and professional training towards the certification and carry out the written and oral exams, checking the continuing points for education and the renewal of your certification. We also have to deal more and more with EFOMP rules and guidelines to be up to date with our guidelines.

Since few years we are organising an educational course on Medical physics in nuclear medicine for the candidates to medical physics certification but also for certified medical physics. This year it was the 3<sup>rd</sup> issue, 8 participants joined it. Since the first course in 2012, it is 38 participants who followed it. I want here to warmly thank all the colleagues who teach them and pass on their knowledges.

This year, BAG has published a new radiation protection ordinance and there will be in the future a lot of challenge to answer for customizing our certification to the new rules. I wish here good luck to the education committee and SSRPM board.

Since two years, we also have intensive discussions with BAG about the radiation protection education of medical physics in Switzerland. We have made some propositions based on some learning objectives under the supervision of the mentor. It is always a work in progress but as soon as the new curriculum will be ready, you will receive information.

Raphael Moeckli with the help of Hans Zimmerman organised this year 3 courses, but the attendance was not always satisfactory. The participation is not mandatory but I encourage all the candidates to take part and all the mentors to encourage their candidates.

Begin of November we had the exams. It was the second time that the exams has been organised based on three stations: basics radiation physics, radiobiology and radiation protection and clinical physics plus a prepared talk. One more time, the exams were perfectly organised. A special thank gets to Stephan Klöck for the perfect organisation and to AMS for welcoming the exams commission and the candidates. This year, 10 candidates passed the exams. Welcome to these new certified medical physicists and on behalf of the education committee, I wish you full success in your new profession.

After more than 10 years within SSRMP board, I want to thank all the colleagues from the board (past and present) for their help to achieve the educational goals and also for the fruitful discussions. It was enriching and I urge each medical physicist to experience it. I want also to thank all the colleagues from the education committee

On behalf of the Education Committee,  
Frédéric Corminboeuf





# EDUCATION

## Results of the Certification Exams in Medical Physics (SSRMP)

In the exams for the certification in medical physics SSRMP 2018 (26.10.-05.11.) the following colleagues succeeded:



From left to right:

**Jarno Bouveret**

**Margherita Casiraghi**, Bellinzona (EOC)

**Luisa Sabrina Stark**, Zürich (USZ)

**Alexander Schegerer**, Luzern (Kantonsspital)

**Jérôme Krayenbühl**, Zürich (USZ)

**Kees Hendrik Spruijt**, Geneve (Clinique des Grangettes)

**Joerg Rottmann**, Villigen (PSI)

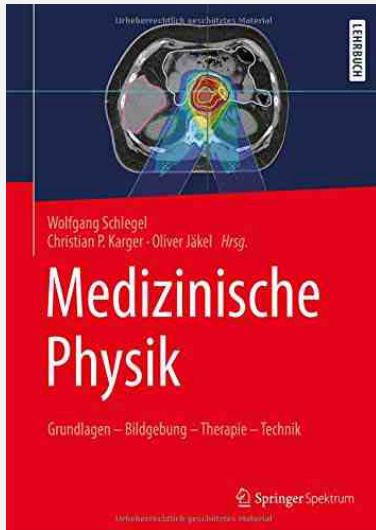
**Giulia Lucconi**, Zürich (USZ) and Villigen (PSI)

**Till Tobias Böhlen**, Villigen (PSI)

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. Especially, I would like to point out that one of the candidates broke the record for the points which could be achieved.

Stephan Klöck,  
Allschwil, 05.11.2018

## Druckfrisch – Neues deutschsprachiges Lehrbuch zur Medizinischen Physik



Nahezu 20 Jahre ist es her, dass der erste Band der Lehrbuchreihe Medizinische Physik, herausgegeben von Wolfgang Schlegel und Joachim Bille, erschienen ist. Das damalige Lehrbuch deckte in drei Bänden zum einen die medizinischen, organisatorischen und rechtlichen Grundlagen der Medizinischen Physik (Band 1) ab, zum anderen die Medizinische Strahlungsphysik (Band 2) sowie die Medizinische Optik und die Laserphysik (Band 3). Die Lehrbuchreihe war damals aus dem am Deutschen Krebsforschungszentrum in Zusammenarbeit mit der Universität Heidelberg regelmäßig stattfindenden weiterbildenden Studienangebot zur Medizinischen Physik hervorgegangen.

Durch die rasanten technologischen Entwicklungen in unserem Fachgebiet erscheint die angesprochene Lehrbuchreihe inzwischen deutlich veraltet und überarbeitungsbedürftig. Dieser Herkulesaufgabe hat sich Wolfgang Schlegel gemeinsam mit seinen Mit-Herausgeber

Christian P. Karger und Oliver Jäkel mit großem Erfolg gestellt. Das nun vorliegende, vollständig überarbeitete Lehrbuch Medizinische Physik deckt die Grundlagen und aktuellen Anwendungen der Medizinischen Physik in großer Breite ab, wobei der Schwerpunkt auf den Anwendungen der Medizinischen Physik in der Radiologie und Radioonkologie liegt. Wie schon das Vorgängerwerk orientiert sich die Struktur des Lehrbuchs an der Weiterbildungsordnung der Deutschen Gesellschaft für Medizinische Physik (DGMP e.V.), entsprechend ist das Lehrbuch in fünf Teile untergliedert:

- Teil I: Grundlagen der Strahlenphysik, der biostatistischen Methoden, der Medizinischen Informatik, der organisatorischen und rechtlichen Aspekte sowie des Strahlenschutzes;
- Teil II: Grundlagen der radiologischen Diagnostik und bildgebenden Verfahren in der Medizin (Röntgen-Computertomographie, Magnetresonanztomographie, Ultraschall);
- Teil III: Methoden der nuklearmedizinischen Diagnostik und Therapie;
- Teil IV: vertiefte Darstellung der Medizinischen Physik der Strahlentherapie;
- Teil V: ausgewählte Themen aus dem Gebiet der Medizintechnik.

Die genannten Themen werden in insgesamt 37 Kapiteln sehr strukturiert und verständlich dargestellt. Für das Verfassen der einzelnen Kapitel haben die Herausgeber nahezu 60 Autoren gewinnen können, die als Wissenschaftler und Lehrende in den Weiterbildungskursen des Deutschen Krebsforschungszentrums Heidelberg ihr jeweiliges Fachgebiet wissenschaftlich fundiert und didaktisch überzeugend darstellen. Die Texte der Autoren werden durch ein umfangreiches Literaturverzeichnis abgerundet, das es dem interessierten Leser sehr schnell ermöglicht, tiefer in das jeweilige Fachgebiet einzudringen.

Darüber hinaus werden am Ende eines jeden Kapitels Fragen und Aufgaben formuliert, die der Vertiefung des Stoffes und der Selbstkontrolle des Gelernten dienen. Ergänzend hierzu gibt es eine allgemein

# EDUCATION

zugängliche Webseite ([www.dkfz.de/springerbuch](http://www.dkfz.de/springerbuch)), auf der die Lösungen der Aufgaben angegeben und dem Leser zusätzliches Material verfügbar gemacht werden soll. Zum Zeitpunkt des Schreibens dieser Rezension existierte die Webseite bereits, allerdings fehlten noch wesentliche Inhalte. Ich bin mir sicher, dass diese in sehr naher Zukunft von den Herausgebern verfügbar gemacht werden.

Das mit insgesamt mehr als 700 Seiten sehr umfangreiche Lehrbuch richtet sich einerseits an die Teilnehmer der Weiterbildungskurse Medizinische Physik der Universität Heidelberg, auf der anderen Seite natürlich an die Studierenden und Lehrenden der vielfältigen, in den letzten Jahren im deutschsprachigen Raum entstandenen, Studiengänge Medizinische Physik. Darüber hinaus bietet es sich hervorragend als Nachschlagewerk für all diejenigen an, die schon lange in der Medizinischen Physik tätig sind und ihr Wissen über angrenzende Gebiete auffrischen wollen.

Zusammenfassend muss man den Herausgebern Wolfgang Schlegel, Christian P. Karger und Oliver Jäkel, die als Wissenschaftler am Deutschen Krebsforschungszentrum tätig sind und als Professoren für Medizinische Physik an der Universität Heidelberg lehren, aber auch dem Springer-Verlag ein großes Lob zollen. Mit ihrem Lehrbuch Medizinische Physik ist ihnen eine umfassende, sehr moderne und aktuelle Darstellung der Medizinischen Physik gelungen. Die strukturierte Aufbereitung der Lehrinhalte und das moderne Layout des Buches mit seinen zahlreichen Abbildungen lädt zum Blättern und Lesen ein. Der Preis des Lehrbuches von 79,99 € bzw. 62,99 € als e-book erscheint dabei absolut angemessen.

Aus Sicht des Autors dieser Rezension hat das Buch das Potenzial, ein Klassiker unter den existierenden Lehrbüchern der Medizinischen Physik zu werden. Ich werde es in meinen Vorlesungen ganz sicher einsetzen.

Glückwünsche und Dank an die Herausgeber Wolfgang Schlegel, Christian P. Karger und Oliver Jäkel!

Prof. Dr. Klemens Zink  
Gießen

## Results of the TLDs Intercomparison for Megavoltage Units 2018

### 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 2018 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. Again, we focused only on static photon beams.

Thirty institutions took part to the 2018 intercomparison with a total of 131 beams checked, including 84 conventional beams with flattening filter (FF) and 47 flattening filter free beams (FFF).

Similar to 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, and 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 2017 have been used. 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 TLDs. The slab dimensions are 40 mm x 40 mm x 10 mm. The phantom was placed on Perspex or water equivalent material (at minimum 5 cm). This arrangement is shown schematically in Figure 1. Each slab contains 3 TLD chips located on a circle 5 mm away from the center.

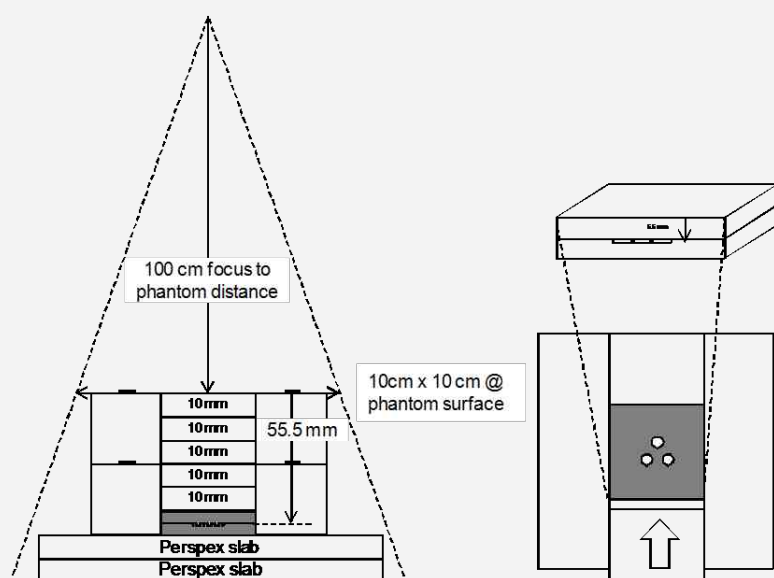


Figure 1. Assembly of the measurement equipment; phantom and (closed) phantom frame

The measurement depth in solid water was 5.55 cm. 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.

A TLD annealing oven and a Harshaw 5500 reader have been used, similarly to earlier intercomparisons. Thanks to our Co-60 irradiation facility, we could use a less time consuming procedure insuring the appropriate metrological traceability. We calibrated the cobalt irradiator available at IRA directly in terms of

absorbed dose for a given radiation quality against the reference dosimeter calibrated at METAS. The irradiator calibration was achieved by means of two series of TLD, one irradiated in the solid water

# SCIENCE

phantom in the intercomparison conditions in the 6, 10 and 18 MV beams of the Elekta at CHUV while the reference value of the absorbed dose 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 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 to water in a water phantom and the exposure time on the 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.

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 Co-60 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.

Four runs of measurements were necessary for the 30 participants. For each one a calibration of all the TLD was carried out before and after the irradiation of the participant in order to determine 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 date recommended to the participants. Then these 50 TLD were all read in a same 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 have been applied.

## 3. Results

The agreement between the stated dose and the TLD measured dose is examined with the ratio "stated/measured" (noted  $D_s/D_m$ ). An agreement within 4% is considered a satisfactory check.

The obtained average ratio for the different beam types and energies is given in Figure 2 with the standard deviation. This repartition shows that all deviations from the unity can be attributed to statistical fluctuations.

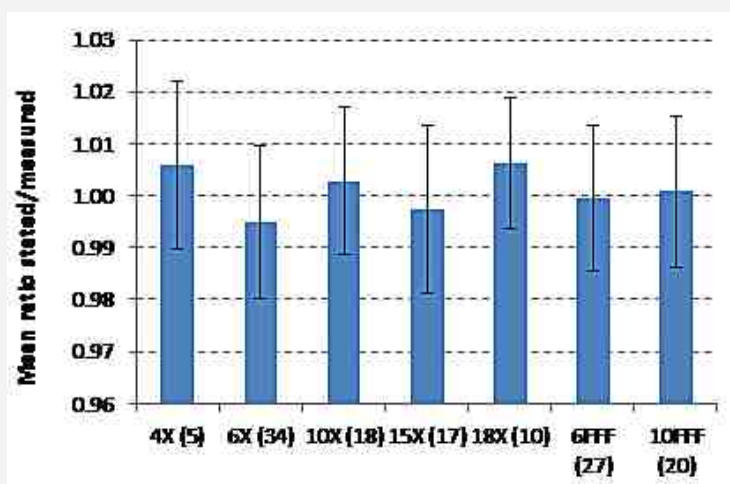


Figure 2. Mean  $D_s/D_m$  values for the different radiation qualities. The number of beams is given in brackets. Errors bars=std dev.



# SCIENCE

The distribution of the Ds/Dm ratio for all the beams is illustrated in Figure 3.

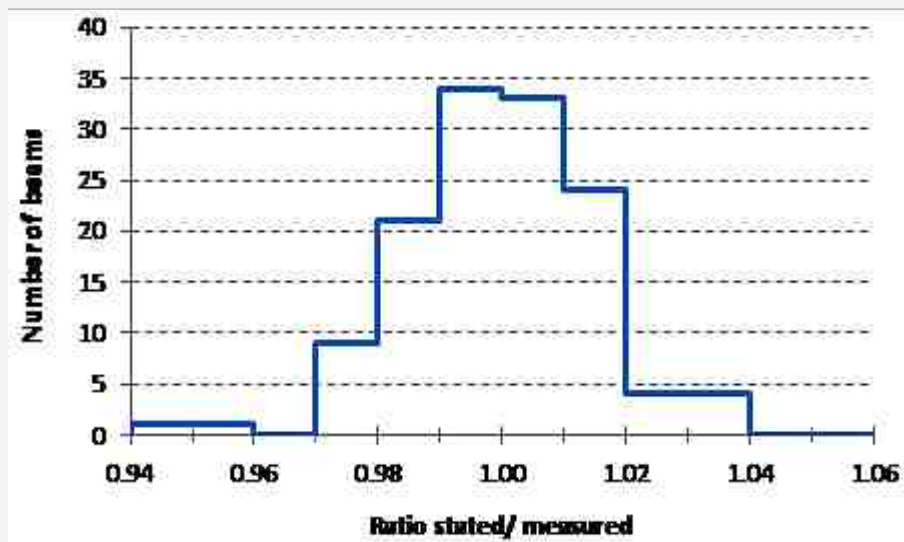


Figure 3. Histogram of Ds/Dm values for all 131 beams from the 30 institutions

The mean value of the Ds/Dm ratio for all the beams is given in Table 1.

The mean value of Ds/Dm for all beams is 0.999. There is no significant difference between the mean values of Ds/Dm for FF beams (0.999) and FFF beams (1.000).

All results except two are in the interval 0.96-1.04, i.e. within 4%, which is judged satisfactory. In addition, 85% of the results are in the interval 0.98-1.02, i.e. within 2%.

In the two cases beyond  $\pm 4\%$ , the participants checked their results, informed us that no problem was discovered in the dosimetry and they repeated the TLD measurements. The second result was satisfactory for both participants. The origin of the initial discrepancies could not be explained. The probability is low that they are due only to the normal fluctuations of the TLD signal. Indeed these fluctuations have been investigated for the uncertainty evaluation and the observed standard deviation was low.

Parameter	FF Beams	FFF Beams	Both types
Beam number	84	47	131
Mean	0.999	1.000	0.999
St. Dev.	1.5%	1.4%	1.5%
Minimum	0.945	0.973	0.945
Maximum	1.033	1.036	1.036

Table 1. Ratio "stated dose/measured dose"

(FF=conventional beams with flattening filter, FFF=flattening filter free beams)

# SCIENCE

## Uncertainties

The uncertainty on the dose determined 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 2. 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 measurements TLD over ten reference TLD were analyzed for six irradiations of 300 TLD.

The combined uncertainty was obtained by quadratic summation and 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 2.4% ( $k=2$ ) for simplicity.

Contribution	Comment	Std unc.
Positioning	$\pm 1$ mm	0.2%
Cobalt irradiator calibration	-	1.05%
Statistical fluctuations of meas.TLD/ref.TLD	type A eval.	0.6%
Non-linearity	all doses 1 Gy	0.05%
Fading	$t < 3$ days	0.10%

Table 2. Uncertainty budget for the absorbed dose measurement with TLD. The contributions are given at the level of one standard uncertainty.

## 4. Dosimetry protocol

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

## 5. Effect of volume averaging for the FFF beams

The participants were asked if they corrected for the effect of volume averaging during the reference dosimetry at the beam commissioning. Like in 2017, only two of them applied such corrections. The reported correction factor for a Farmer-type chamber was between 1.002 and 1.004 for a 6XFFF beam, and between 1.004 and 1.007 for a 10XFFF beam of a TrueBeam linac.

# SCIENCE

## IBA-Europhysics Prize 2017



Prof. Habib Zaidi is the recipient of the prestigious 2017 IBA-Europhysics Prize given by the European Physical Society through its Nuclear Physics Division for «Seminal contributions he has made to quantitative molecular imaging and computational radiation dosimetry». The prize was awarded at the 4<sup>th</sup> European Nuclear Physics Conference, 2-7 September 2018, held in Bologna (Italy).

Habib Zaidi is head of the PET Instrumentation & Neuroimaging Laboratory at Geneva University Hospital. He is also a Professor of Medical Physics at the University of Groningen (The Netherlands) and Adjunct Professor of Medical Physics and Molecular Imaging at the University of Southern Denmark (Denmark). He was recently named founding Editor-in-Chief (Scientific) of The British Journal of Radiology (BJR)|Open.

More details about the award are available at:

<http://www.epsnews.eu/2017/12/2017-iba-europhysics-prize-winner/>

# SCIENCE

## Varian Award 2018

At the general assembly on November 22, 2018 in Lausanne, two papers were awarded with the **Varian Main Award** of Radiation Oncology of SSRMP:

Three papers were awarded with the **Varian Recognition Award** of Radiation Oncology of SSRMP:

**SILVAN MÜLLER**

WITH THE  
**VARIAN MAIN AWARD 2018**  
FOR THE WORK

**SIMULTANEOUS OPTIMIZATION OF PHOTONS  
AND ELECTRONS FOR MIXED BEAM  
RADIOTHERAPY**

**STEFANIE EHRBAR, ALEXANDER JÖHL,  
MICHAEL KÜHNI, MIRKO MERBOLDT,  
ECE OZKAN ELSER, CHRISTINE TANNER,  
ORCUN GOKSEL, STEPHAN KLÖCK,  
JAN UNKELBACH, MATTHIAS GUCKENBER,  
STEPHANIE TANADINI-LANG**

WITH THE  
**VARIAN MAIN AWARD 2018**  
FOR THE WORK

**ELPHA: DYNAMICALLY DEFORMABLE LIVER  
PHANTOM FOR REAL-TIME ADAPTIVE  
RADIOTHERAPY TREATMENTS**

**MARTA BOGOWICZ, RALPH T.H. LEIJENAAR,  
STEPHANIE TANADINI-LANG,  
OLIVER RIESTERER, MARTIN PRUSCHY,  
GABRIELA STUDER, JAN UNKELBACH,  
MATTHIAS GUCKENBERGER,  
ENDER KONUKOGLU, PHILIPPE LAMBIN**

WITH THE  
**VARIAN RECOGNITION AWARD 2018**  
FOR THE WORK

**POST-RADIOCHEMOTHERAPY PET RADIOMICS  
IN HEAD AND NECK CANCER – THE INFLUENCE  
OF RADIOMICS IMPLEMENTATION ON THE  
REPRODUCIBILITY OF LOCAL CONTROL TUMOR  
MODELS**

**C. WINTERHALTER, A. LOMAX, D. OXLEY,  
D.C. WEBER, S. SAFAI**

WITH THE  
**VARIAN RECOGNITION AWARD 2018**  
FOR THE WORK

**A STUDY OF LATERAL FALL-OFF (PENUMBRA)  
OPTIMISATION FOR PENCIL BEAM SCANNING  
(PBS) PROTON THERAPY**

**OLIVIER PISATURO**

WITH THE  
**VARIAN RECOGNITION AWARD 2018**  
FOR THE WORK

**TRANSITQA – A NEW METHOD FOR TRANSIT  
DOSIMETRY OF TOMOTHERAPY PATIENTS**

# SCIENCE

We congratulate the winners and thank them for the important work.



*From left to right: Vuong Diem, Olivier Pisaturo, Carla Winterhalter, Silvan Müller, Stefanie Ehrbar, Pierre-Alain Tercier*

In addition, we thank Varian Medical Systems for their support.

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



# SCIENCE

## SSRMP Varian Award for Radiation Oncology

**Deadline for submission: March 21<sup>st</sup> 2019**

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 27<sup>th</sup>, 2006 and renewed by the annual assembly of SSRMP September 27<sup>th</sup>, 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 2019 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 2019

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 30.06.2019

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 (preferably via email) to the chair of the SSRMP Science Committee:

Raphaël Moeckli, [raphael.moeckli@chuv.ch](mailto:raphael.moeckli@chuv.ch)  
Institut de Radiophysique, Rue du Grand Pré 1, 1007 Lausanne

# SCIENCE

## SCR' 2019 Announcement

# SCR'19

**JUNE 13–15, 2019 | ST. GALLEN**

SWISS CONGRESS OF RADIOLOGY  
SCHWEIZERISCHER RADIOLOGIEKONGRESS  
CONGRÈS SUISSE DE RADIOLOGIE

SCR is the largest radiological scientific & educational meeting in Switzerland. It is organised by the Swiss Society of Radiology (SGR-SSR), the Swiss Society of Nuclear Medicine (SGNM-SSMN) and the Swiss Association of Radiographers (SVMTRA-ASTRM).

This year, the SSRMP was invited to co-organise six sessions together with the SGR, the SVMTRA and the SGNM. This is a great opportunity for the medical physicists to increase their contribution and to strengthen the position of the profession within the field of medical imaging.

### Venue

St. Gallen, Olma Messen

### Registration

will open in February 2019

special fees for SSRMP members

### Congress Presidents

SGR-SSR	Pr. Dr. D. Weishaupt, Zürich
SGNM-SSMN	Prof. Dr. Schaefer, Lausanne
SVMTRA-ASTRM	Mrs. Isabelle Gremion, Epalinges



## "Monte Carlo Methoden bei der Anwendung ionisierender Strahlung in der Medizin"

30<sup>th</sup> Winterschule für Medizinische Physik, 11<sup>th</sup> – 16<sup>th</sup> March 2018

This spring, the 30<sup>th</sup> Winterschule für Medizinische Physik in Pichl offered a full week course on Monte Carlo (MC) calculation methods for applications of ionizing radiation. The course was lead by Professor Michael Fix from Inselspital Bern. In addition to theoretical lessons, also two practical hands-on sessions were offered, and as a preparation task all participants were asked to install the Python software on their own laptops in order to run simple MC simulations.

The Course started with a refresher lesson on the physics of radiation transport in matter, followed by an introduction to the basic intents of Monte Carlo and associated problems like generation of random numbers or estimation and reduction of statistical errors. Further, an overview to the currently most common used general-purpose and dedicated MC codes was given.

Day 2 and 3 were dedicated to MC application in the clinic. A first topic was MC simulation of linacs and of dose measurements with ionisation chambers. We obtained an overview on calculations concerning quality assurance or small field dosimetry. Another lesson focused on the comparison of MC based and conventional dose calculation algorithms, for photon therapy, proton therapy and brachytherapy. Next, we learned about the applicability of MC calculations in time dependent processes; especially the handling of interplay between dynamic beam delivery and patient geometry. Furthermore, we obtained an overview on MC calculation in CT imaging: the estimation of patient dose and the estimation and correction of scatter effects. The lessons finished with simulations of particle transport in MRI linacs.

The last two days were reserved for radiation protection, hadron therapy, brachytherapy and nuclear medicine. In radiation protection, MC is a valuable tool, e.g. for simulation and design of shielding, simulation of neutron pollution or estimation of activated isotopes. An important aspect with most MC simulations is the relatively large effort on computing power. Thus, one lesson focused on technical possibilities to parallelized computing, especially by means of GPUs.

During the two practical hands-on sessions, we were taught to implement simple models of radiation absorption, depth dose calculations, and particle transport in a homogeneous material including absorption and spatial scatter.

The course participants obtained a general and comprehensive overview to how MC is currently used in medical application of ionizing radiation. Thus, the course was very useful for both MC newcomers and more advanced users. Being a beginner, I appreciated the practical sessions as a perfect complement to the theoretical lessons as a first step to use MC in clinical routine.

Last but not least, the special Winterschule atmosphere being a mixture of education, sport, relaxing and exciting discussions was more than just an educational event. Many thanks to Michael Fix and the entire faculty for a very interesting and useful course.

Tino Streller,  
Luzerner Kantonsspital

# Issues Of Interest

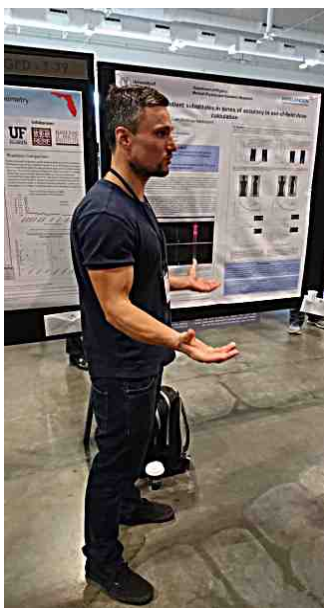
## **“Beyond the Future!” AAPM 60<sup>th</sup> Annual Meeting Nashville, TN, 29<sup>th</sup> July - 2<sup>nd</sup> August 2018**

This year's AAPM meeting with the theme “Beyond the Future!” has been dedicated to the future of AAPM. This goal not only manifested in the futuristic location (the Music City Center in Nashville, built in 2013) but also in the President's Symposium, which emphasized the need to “think out of the box” and the importance of “creating the future we want”.

The AAPM conference program covered both educational and scientific topics on therapy and imaging, sessions on professional, practical medical physics and a speciality track on “Quantitative Imaging in the Era of Big Data and Precision Medicine”.



*Paul Brown, “What's the best way to prepare for the future?”*



The conference was held in parallel sessions distributed over ten different rooms. It therefore offered a wide range of topics to choose from, including, but not limited to, quality assurance and dosimetry; treatment planning; radiobiology and outcome modelling; adaptive radiation therapy; imaging modalities, registration and guidance; motion management; robustness; machine learning and automation. This huge choice of subjects resulted in a very interesting meeting program. Due to the immense amount of sessions taking place simultaneously, it proved however difficult to catch all interesting presentations.

*Pascal Hauri, “The Effect of Patient Substitutes in Terms of the Accuracy in Out-Of-Field Dose Calculation”*

Hot topic all over the place was definitely automation. Many approaches for knowledge-based planning, automated planning and multicriteria optimization were compared extensively, the importance of automated contouring was pointed out and educational sessions hypothesized how artificial intelligence could have an impact on radiotherapy. In summary, it was apparent that techniques for automation get more and more introduced in certain areas like treatment planning and that similar techniques are investigated to be applied in basically any area of radiotherapy in order to reduce treatment toxicities and to increase patient safety.



# Issues Of Interest

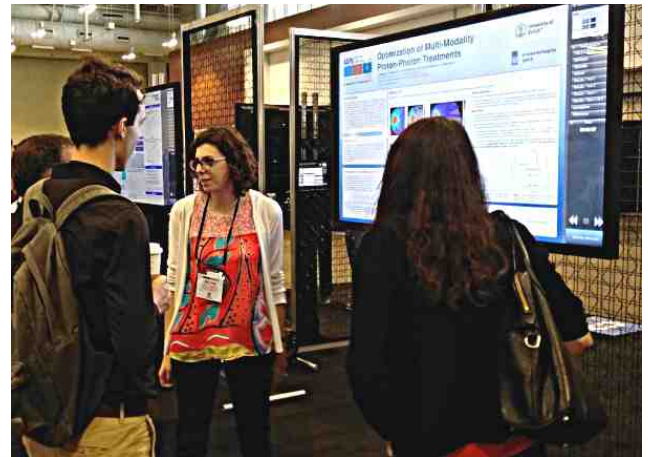
Additional highlights of the conference included a dedicated ePoster session, in which the presenter of the highest scoring Physics contributions discussed their work; and a MedPhys slam, in which latest medical physics research was presented with three slides in three minutes.

In one ‘best-in-physics’ discussion for instance, a cone-beam CT technique for interventional cardiac procedures was presented which allows to compensate for cardiac rhythm variations by regulating gantry velocity and projection time interval in real-time, based on the patient’s electrocardiograph signal.

SSRMP was represented by multiple Swiss contributions, coming from the Inselspital Bern, the Hirslanden Medical Center Zurich, the University Hospital Zurich, the Paul Scherrer Institut, ETH Zurich and the Universities of Bern, Basel and Zurich.

The conference not only impressed with an enormous scientific program, it also included a large exhibit hall with a wide range of vendors. Furthermore, the social event in the “Country Music Hall of Fame” was great to connect with colleagues and it offered the unique opportunity to learn how to line dance.

After five great days in Nashville, we are now looking forward to the next AAPM, which will take place in San Antonio, TX, in July 2019.



*Silvia Fabiano, “Optimization of Multi-Modality Proton-Photon Treatment”*

Carla Winterhalter (PSI, Villigen) & Silvan Müller (Inselspital, Bern)

# Issues Of Interest

## 2<sup>nd</sup> European Congress of Medical Physics

Copenhagen 23<sup>rd</sup> - 25<sup>th</sup> August 2018

For its second edition of the European Congress of Medical Physics (ECMP), the European Federation of Medical Physics (EFOMP) repeats its goal of bringing together the medical physicists with this time the strong statement: “Bridging knowledge across specialties”. Each components of medical physics as radiotherapy, nuclear medicine and radiology were given an equivalent attention with an enhanced focus on MRI.

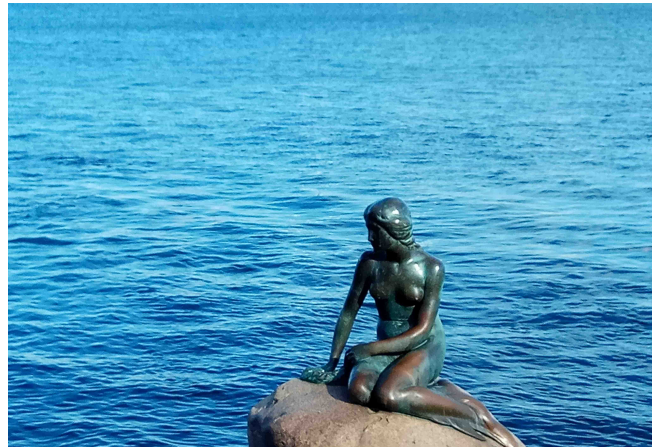
This second ECMP was jointly organized by the medical physics societies in Denmark and Sweden and the congress program committee supported by EFOMP. The German society of medical physics (DGMP) was invited as Welcome Nation to organize two sessions as part of the congress program.

The week started with the Summer School on Imaging Modalities in Medical Physics (CT and MRI) on 21<sup>st</sup> and 22<sup>nd</sup> of August and pre-meetings with specific topics, that were covered on 23<sup>rd</sup> of August:

1. Statistics in Medical Physics
2. IMRT&VMAT planning in practice
3. Fundamentals of Nuclear Medicine Dosimetry
4. Patient specific dosimetry for cardiac CT perfusion imaging

The congress started early every morning with one hour refresher courses covering a wide range of topics like proton radiotherapy planning, breast tomosynthesis and clinical alpha-particle dosimetry, as examples. Risk management in radiotherapy was also among them and this could also apply to radiology as well as nuclear medicine. The two lecturers strongly supported the key role of the medical physicist being part of a multidisciplinary team leading the implementation of a risk management system and establishing the necessary culture within a medical department. The meaning of risk is indeed subjective. They additionally insisted on the good communication skills that must have such a committed medical physicist. Although the legislation requires quality management systems, they addressed the balance of outcome vs cost as such project is high resource demanding. A strong commitment of the department's head is obviously a key for success.

Another topic, which was not treated only as a refresher course but during a dedicated session, was the radiomics. In the first invited lecture, we learnt about the fundamentals of radiomics: how large amount of quantitative features, such as shape, texture and statistical measures, are extracted from medical images to prospect disease relations. In the second lecture, we heard how deep learning (machine learning) is the key component in the different analysis steps of this massive process. Once the neural network algorithm has learnt from a large and fully representative data sample, the determined model can then execute the task very quickly. Organ autosegmentation in MR images is such a task. However,



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disease anatomy, as it is different patient to patient, is very challenging for deep learning.

Early commercial products are today mainly available in computer aided object detection like for soft tissue objects in mammography, acute stroke workup in brain in CT and tissue classification in digital pathology.

The plenary session was on deep-learning in CT and the presentation was given by M. Kachelriess. He gave many examples on the potentials of deep learning such as artifact correction, noise reduction and real-time dose assessment (for both radiology and radiation therapy). He addressed also the risk to create “nice looking images that do not represent the truth”. His presentation can be found on [www.dkfz.de/ct](http://www.dkfz.de/ct).

Afternoons started with joint sessions organised by EFOMP along with different societies or organisations on various topics. All were very interesting and well attended. The EFOMP-ESTRO session intended to stress again on multidisciplinary working in radiotherapy. We loved the radiation oncologist, obviously a strong supporter of medical physicists (her husband is one of them!). The medical physicists showed how quantitative PET imaging and MRI are widely and deeply used for oncology and guided RT. They advocate the need for dedicated radiotherapy medical physicists specialized in these disciplines and having strong cross relations with their colleagues of the imaging units.

In the joint session hosted by ESMRMB, the focus on MR in RT was further developed, first with an overview of the rich multimetric MRI (DWI, ADC, DCE, etc...) which provides biological and metabolic information on the tumor. Then, we were demonstrated how close we are to get rid of our CT-sim to plan radiotherapy directly from MR scans and finally, the challenges we are facing in MR guided RT. Time reduction strategies in every step of the planning to the treatment are the keys to make quasi real time adaptive treatments happen.

During the joint session EFOMP-IAEA, J. Vassileva referred to the technical meeting held in IAEA on “*Patient dose monitoring and the use of diagnostic reference levels for the optimization of protection in medical imaging: current status and challenges worldwide*”. She focused her presentation on patient dose monitoring systems and the challenges for their implementation as they were addressed during this meeting. There is a need to standardize the examination nomenclature as well as the need to group the patients according to their age, weight or size, which currently seems impossible. Other open points were the data analysis (statistical requirements, sample size, representativeness of the sample, etc.) and the data management (data protection, confidentiality, access control, etc.).

As Welcome Nation Germany, DGMP proposed interesting presentations on their initial experience with MR guided radiotherapy using different equipment, like the MRIdian (Viewray) and the Unity (Elekta). Riveting topics in proton beams were also proposed like range prediction improvement using dual energy CT.





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Scientific sessions followed the refresher courses in the morning and the joint sessions in the afternoon until 18:00. Like in Athens, each session started with an introductory presentation of 20 minutes and continued with 6 to 8 short presentations on scientific works related to the main topics. As expected, many presentations concerned CT examinations.

One invited speaker, M. Mahesh, discussed the reasons why dual-energy CT (DECT) has not become a widely used tool. The reasons he gave were the scanner cost (purchase, maintenance and service costs), the reimbursement policy, the additional processing time needed for image reconstruction and the corresponding time for interpretation by the radiologists, the need of an additional training for the radiologists and last but not least the limited to niche applications of DECT. He concluded that a DECT is currently suitable for premier centers but not for community hospitals (terminology in USA).

A very practical presentation on CT was given by R. Bujila on the impact of scan settings on automatic tube current modulation (ATCM). In his work, the behavior of ATCM of four machines from different vendors was evaluated with a special phantom that triggered the ATCM. He concluded that the ATCM is vendor, model and size specific and warned us that ATCM can be “our closest ally, but it can also be our worst enemy”. His work was published under the title *“Evaluating the impact of scan settings on automatic tube current modulation in CT using a novel phantom”*.

Another topic that would be interesting for the Swiss medical physicists was briefly discussed after the presentation of H. Bosmans entitled *“Annual quality assurance testing on radiological equipment: why is this an important task of the MPE?”*. During her presentation, she tried to present how to use quality controls to optimise radiation exposure. Although she demonstrated some interesting tests and data, it was never explained why the context of specifically annual testing is important and a question of the public addressed the issue that quality controls (QC) are not necessarily what an MPE should do to optimize the procedures. This is, in our opinion, an important point, as traditionally, in Europe, MPE focused and performed QC, in contrast with Switzerland where QC are performed by the manufacturers. It seems so, that our colleagues are moving their attention towards patient dose optimization and are starting to raise the same issues.



Overall, it was a very interesting congress for medical physicists. Colleagues with different background in the field (radiation therapy, nuclear medicine, medical imaging with ionizing and non-ionizing radiation and other applications of physics in medicine) had the chance to meet and get informed about current matters in medical physics. A Focus Issue that will include around 40 papers on the works presented in ECMP 2018 will be published in April/May 2019 in *Physica Medica*. We hope that the level of the next congress will be as high as the first one and more colleagues from Europe and Switzerland will attend it. The next ECMP congress will be held in Torino, Italy in September 24-26, 2020. Save the date!

Copenhagen is an amazing town, ideal for bike lovers! If you haven't been there, it is worth a visit. You are not going to meet a lot of medical physicists, but you can meet the tallest man in the world, the fairy tale authors Hans Christian Andersen and you can amuse yourself or just relax in Tivoli park.

Jean-Yves Ray, Elina Samara  
Hôpital du Valais

## 3<sup>rd</sup> National symposium on RP FOPH, Bern 21<sup>st</sup> September 2018.

### Radiation protection in the OP area

The 3<sup>rd</sup> national symposium on radiation protection (3. Strahlenschutztag) was held at the Federal Office of Public Health (FOPH) in Bern on September 21<sup>st</sup> 2018. The symposium, which was well attended, was about the 206 technical audits that the FOPH conducted in different OP departments between 2016 and 2018. Different aspects of radiation protection in the OP area, first results of the evaluation of the audits, and future challenges were presented. There was a lively discussion between audience and the organizers of the symposium.



In the beginning, Jaqueline Metzen, co-project manager of the FOPH audits in the OP area, gave an exhaustive introduction to the topic. Nationwide, more than 900 mobile X-ray devices are authorized to be used in the OP area where more than 1,700 persons of various profession groups (surgical operation assistants, surgeons, RTT, physicists etc.) are involved. According to Metzen, the audits revealed a considerable lack of awareness in radiation protection expressed by insufficient training in basic issues of radiation protection, the unwillingness to wear a whole body radiation dosimeter, the improper handling of devices, and the deficient quality of lead aprons. Against this background, the idea of the audits was to increase the awareness in radiation protection, to support the internal communication among (responsible) staff members and radiation protection experts and to strengthen the position of medical physicists in the OP area.

Different guest speakers described the experiences that they made during the audits. The radiologist Dr. Ute Wagnetz from the Spital Bülach underlined the positive changes in the OP department of their institution that resulted from the audit, such as the purchase of sensitive electronic person dosimeters for (pregnant) employees, and the increased awareness for further training. Furthermore, the obligation for staff members to wear a whole body dosimeter became part of the annual employee appraisals immediately just after the audit, Wagnetz said. Alexander Hutter, care manager of the OP department of



# Issues Of Interest



the university hospital Zurich also reported from the positive experiences they made: “The result of the audit was the foundation of a new department of radiation protection at the USZ: the audit made fun and his colleagues asked for further FOPH audits. However, as Hutter described, the key to success was a good preparation starting several months before the audit. Moreover, at first, when the audit was announced, his colleagues from the involved departments (heart surgery, urology, traumatology, neuro surgery department) were rather dismissive”. Hutter mentioned that the last training of staff members in radiation protection

was a long time ago. Gabriel von Allmen, deputy head of the radiology assistants at the Inselspitalgruppe Bern agreed: “There is not a high understanding and willingness to implement radiation protection measures in the OP area. The measures are considered as elaborate and exhausting government regulations. One main problem is that there is not any contact person in the OP area who is responsible for radiation protection and who takes his/her responsibility seriously”. He recommended intensifying the partner-like relationship between staff members of the OP area and radiology department.

The radiation exposure in endovascular interventions is quite high, emphasized Eliza Nowak, leading physician in Cardiovascular Surgery at the cardiovascular center in Lachen. For an efficient protection of patients and staff against ionizing radiation, surgeons have to be regularly trained. It is important to use all available radiation protection means, such as lead aprons of sufficient thickness that fully cover the body including the back, the thyroid and thighbones. Tamara Högg from the medical technology department of Kantonsspital St. Gallen explained how elaborate and time-consuming it is to organize and implement inspections of lead aprons in such a big hospital as the Kantonsspital St. Gallen. A well-developed, uniform IT network, good IT connection of all X-ray image intensifiers used in operating rooms, a mature concept of initial briefing of all staff members working with X-ray devices, and a clear division of responsibilities between central and local radiation protection expert groups are key requirements for dose management and radiation protection in a chain of hospitals consisting of 17 hospitals, as Roland Simmler, leading medical physicist of the Hirslanden Group explained.

After an interesting and lively discussion among participants and organizers of the symposium, Philip Trueb, chair of the department radiation protection at FOPH, briefly underlined the legal obligation of all radiation protection experts to develop an education concept adapted to the needs of their institutions. Dr. Carine Galli Marxer concluded the symposium by presenting the ideas and the implementation of clinical audits starting in 2020.

Alexander Schegerer,  
Kantonsspital Luzern



## PhD platform: Thengumpallil Sheeba

### Impact of uncertainties in the management of respiratory motion for modern radiotherapy

The evolution of the modern technology of radiation oncology has been very rapid, resulting in a significant escalation of treatment complexity, especially during the last decade. Such a complexity has as a primary aim to improve targeting of the malignant cells with greater radiation while minimizing the dose to normal tissue, thus offering an improved tumor control and reduced side effects. Some key features of this evolution include: immobilization, imaging for tumor staging and localization, treatment planning, motion control and dose delivery combined with image guidance. Each step of the process of radiation treatment involves uncertainties, both human- and technology-based, which may jeopardize the potential advantages of the new, complex and expensive technologies. As an example, breathing-induced organ motion poses a significant challenge to the imaging of the tumors in the lungs or abdomen, for both the planning and the verification, therefore becoming a significant source of uncertainty in radiotherapy. If respiratory motion is not taken into account, it leads to artifacts in the images and dose blurring in treatment delivery. A strong correlation is observed between the respiratory irregularity and the severity of artifacts; a proper integration of breathing motion into the treatment planning and in the image-guidance radiotherapy (4D IGRT) is then of crucial importance.

The aim of my thesis is to show some examples of uncertainties in modern radiotherapy and propose some guidelines in how to manage them in the clinical workflow. More specifically, the impact of the breathing motion was investigated on the 4D CT, 4D CBCT and finally on the treatment margins for frameless lung SBRT treatments. The PhD work was carried out at the University Hospital of Lausanne (CHUV), Switzerland. The idea behind is to evaluate and to take into account the uncertainties induced by breathing motion in the different steps of the radiotherapy chain, from imaging, planning to delivery.

The work is divided into three studies:

- **Study 1:** 4D CT acquisitions performed on a dynamic thorax phantom to assess the robustness of the 4D CT sorting algorithms in the definition of the tumor volume and thereby its impact on the margins definition for free-breathing lung radiotherapy treatments. We find that the amplitude-sorting algorithm is superior to the phase-sorting in terms of motion artefact, thus reducing delineation error and so the margins definition for a better sparing of healthy tissues (published in *Radiother. Oncol.* 2016).
- **Study 2:** Comparison of the performances of the 3D and 4D CBCT in terms of dose delivery and image quality. We find that the 4D CBCT ensures a reasonable dose delivery and a better image quality when moving tumors are involved compared to 3D CBCT (published in *J. Appl. Clin. Med. Phys.* 2016).
- **Study 3:** Retrospective analysis of the impact of the respiratory motion in the margins for lung SBRT based on a 4D CBCT patients' data-sets. We obtain a good agreement between the applied treatment margins and the retrospectively calculated margins. We could also infer via the bootstrap analysis the minimum statistical significant number of patients needed to validate our margins and to apply them to the forthcoming lung SBRT patients (to be submitted).

As a future perspective, it would be interesting to study the potential benefit of using functional imaging such as 4D PET-CT for a better tumor identification and delineation in clinical practice. Another challenging topic includes registration applied to different imaging modalities, such as CT, PET, MRI and CBCT, especially in the frame of moving tumors and changes in anatomy.

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## Interview with the Doctor



### What brought you to choose this topic for your PhD?

Before starting this PhD I was already fascinated by the topic of motion management in radiation therapy. I believe that despite the amount of studies performed on this topic, there remain still plenty of aspects to be investigated, especially with the increase of complexity in modern radiation therapy. My PhD was an opportunity to investigate some of them.

### What did you enjoy the most about the project?

I enjoyed the challenge of doing research in a University Hospital, collaborating with different peoples such as medical physicists, doctors, RTTs and companies. I also appreciate a lot to participate at international conferences, where I can share my results, and to report these results in scientific journals. Most of all, I find the PhD a remarkable experience which taught me how to be a problem-solver; how to be organized, rigorous and capable to communicate with people having different backgrounds.

### Which part of the project was the most challenging?

Finding new ideas for the project that could be relevant and useful in the field of radiation therapy. Interpreting the results and validating them in relation to what is published in literature.

### What impact do you think that your results will bring to the med phys society/world etc.?

I think that the results of my PhD work can be used by different radiotherapy centers as a support/guideline to implement or improve the clinical workflow for lung SBRT treatments.

### Would you do it again?

Good question. Yes I do.

### What are your plans for the future?

To pursue my passion for this field and be able to offer the best, up-to-date treatments to patients, taking special care to the improvement of safety and quality in radiation therapy.

Thengumpallil Sheeba,  
Clinique des Grangettes, Genève





## Biel



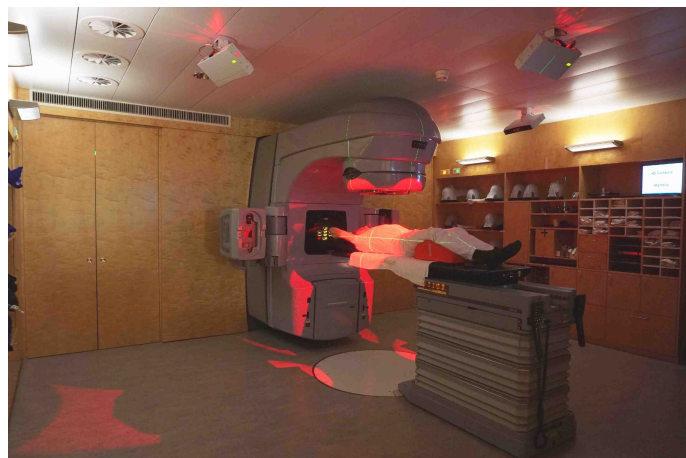
The Radio-Onkologiezentrum (ROZ) Biel was founded in 2002 as Aktiengesellschaft (AG) on the initiative of Spitalzentrum Biel and the Privatklinik Linde Biel and with the participation of Hôpital du Jura Bernois to facilitate access to radiation treatment for patients in the region of Biel. Such a joint venture between private and public hospitals was a novelty at that time. Thanks to the generous financial support of more than 200 individuals and institutions, a new free-standing building was constructed just across the road of Privatklinik Linde. Inselspital Bern not only participated financially in the new AG but also provided personnel support for the installation and commissioning of the necessary equipment so that the first patient could be treated in May 2005 even before the official opening of the new center.

At that time, we started with one Varian Clinac (2100CD), a Philips Accusim CT with a LAP Dorado 4 system, the Eclipse Treatment Planning System and the ARIA® oncology information system. In clinical routine, we soon realized that the CT was not suited to our needs and it was replaced after 6 months by a Philips Brilliance Big Bore CT. Four years later, in 2009, a second Varian Clinac (iX) was installed and the 2100CD was retrofitted with the OBI system. In 2017, a Varian TrueBeam machine, equipped with a PerfectPitch six degrees of freedom couch, replaced the first Clinac. During these years, modern treatment techniques were implemented, such as Intensity Modulated Radiotherapy (2007), Image Guided Radiotherapy (2009) and Volumetric Modulated Arc Therapy (2013) in collaboration with our colleagues at the Inselspital.

In 2016, we implemented AlignRT® (VisionRT), a novel solution for 3D optical surface guided radiation therapy (SGRT). AlignRT is a very versatile tool that, by tracking the patient's surface, assists patient setup, allows the monitoring of the patient position during treatment and supports breath dependent

## Spotlight On

treatments like e.g. deep inspiration breath hold (DIBH). The implementation of AlignRT was in fact the result of the request by our chief physician Dr. Karl Beer to treat our left-sided breast patients in DIBH with the goal to spare heart tissue from the high dose region.



*Initial patient positioning with AlignRT*

Nowadays, all our left-sided breast patients are treated with DIBH and monitored by AlignRT. Thanks to the enthusiasm of our team for this new technology, most of the standard treatments are also monitored with surface imaging to guarantee correct positioning during treatment. Moreover, initial patient positioning is performed with AlignRT. After a one-year study phase, we concluded that it was safe to omit skin marking of the patient and perform daily initial positioning with surface imaging only. This step is a major gain in patient comfort and it simplifies and speeds up our workflow. As before, when initial positioning

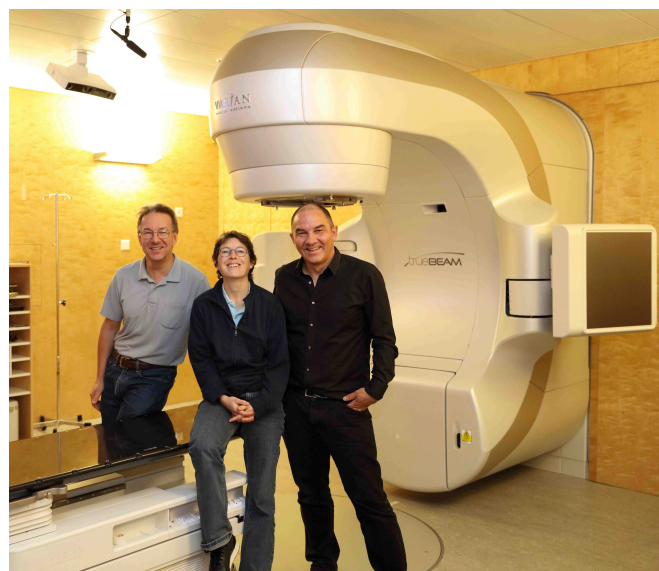
was skin mark based, the final position of the patient is still verified with kV-kV imaging and corrected if needed. The center also serves as a reference center for VisionRT.

Nowadays we treat about 450 patients per year mainly from the region of Biel, the Seeland and the Jura Bernois. As patients are in equal part German- and French-speaking, written and spoken communication is handled in both languages. In fact, being a bilingual facility is one of the strengths of our center.

Our team consists of two radiation oncologists, seven RTTs, three certified physicists, three secretaries and one chief financial officer. One of our radiation oncologists and the three physicists are employed by Inselspital, allowing for a close collaboration. Since 2006, our center has hosted the SRO board examination. Each year in November, about 10 young doctors pass the written, oral and practical exams needed to get the FMH specialization in radiation therapy. Over two days, our team is involved as examiners (the doctors and the physicists) but also to provide patients who are willing to participate in the practical exams.

Currently, we are preparing the implementation of stereotactic treatments of intracranial lesions in collaboration with Inselspital. The replacement of our remaining Clinac by a TrueBeam machine is also scheduled for next year.

Cécile Chatelain, Pascal Favre and Daniel Vetterli



*The physics team from left to right:  
Daniel Vetterli, Cécile Chatelain and Pascal Favre.*



“Welcome!”

## Sofia Celi



Originally Belorussian - Ecuadorian, I was always on the move until family life brought me to Switzerland to settle down.

I studied Physics at the University of Heidelberg (Germany). After trying several specialties, I chose medical physics. During my diploma thesis at the German Cancer Research Center (DKFZ, Heidelberg, Germany) I philosophized on probabilistic treatment margins. But as I couldn't settle on a career path, I also cumulated internships in radiotherapy departments in Spain, France and the USA.

As many before me, I dreamed of working at the crossroads of clinics, academia and the industry. So I went on to do a PhD on EPID based in vivo dosimetry at the Institut Curie (Paris, France) in cooperation with Dosisoft SA.

In addition to the specialized knowledge and life-saving skills one acquires during a doctoral experience, this was an immersion in the overlapping worlds of clinics and industry and gave me a new perspective on both being a client/user and a vendor/developer.

After graduating, I finally took some time to reflect (baby...) and decided clinics was The One. The Kantonsspital Baden Team kindly gave me a chance to prove myself during a short internship. And now, almost a year later, I am proudly a medical physics resident in the Radio-oncology Center KSA-KSB, counting my blessings for doing what I love under the guidance of a dedicated and passionate multi-skilled and multi-disciplinary team.

Sofia Celi,  
Radio-Onkologie-Zentrum KSA-KSB, sofia.celi@ksa.ch

## “People on the move”

### Handover in Allschwil

First, I would like to announce that Vesselin Miltchev retired at the end of September 2018 after decades of practice in Swiss medical physics (USZ, KSA ...) and working in Allschwil since April 2005. There, amongst others he was responsible for the technical implementation of a TrueBeam and built up a very comprehensive QA system for all technical aspects of the procedures and devices used at this site. It is a pleasure for me to become his successor.

In my 20th year in Switzerland, after “(re)-building up” medical physical services in Münsterlingen and again at the UniversityHospital of Zurich (USZ) and working with a great team (lately more like a manager) at USZ for more than nine years, it was time for a change and an adaptation of my working vision. First desire was to “come home” again: performing all the great practical medical physics tasks in a clinical environment, as metrological exploration and tuning of a linear accelerator... but I don't want to bother you with this well known aspects of routine work in the life of a medical physicist.

Switzerland has reached a very high level in the availability and quality of radiation therapy services and is about to saturate. Some workshops, discussions with colleagues and possible investors from abroad shifted my attention from the cutting-edge technology to the need of making these services of easier availability in emerging and developing countries as well. For many years several international organizations as WHO and IAEA and other NGOs have struggled to improve the situation. But a low level of professional education and severe uncertainties in important economical and political aspects seems to impede the desirable success. Since more than one year, I'm thinking about options to change the game and discussing with possible partners. We will see...

Hoping to see you in Allschwil or somewhere else!  
Kind regards,



*Stephan Klöck and Vesselin Miltchev (right) during the “farewell dosimetry”.*

Stephan Klöck.  
(stephan.kloeck@aerztehaus-allschwil.ch)

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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. 94 (01/2019): 03.2019**

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# Conference Calendar

## CALENDAR 2019

- March 3**  
Pichl, AT  
Winterschule Pichl für Medizinische Physik 2019  
March 3 - March 8  
<https://www.winterschule-pichl.de/>
- March 30**  
Orlando, USA  
2019 AAPM Spring Clinical Meeting  
March 30 - April 2  
<https://w3.aapm.org/meetings/2019SCM/>
- April 15**  
Münich, DE  
PSMR 2019 8<sup>th</sup> Conference on PET/MR and SPECT/MR  
April 15 - April 17  
<https://www.psmr-conference.com/>
- May 27**  
Lisbon, PT  
3<sup>rd</sup> International Conference on Dosimetry and its Applications (ICDA-3)  
May 27 - May 31  
<http://www.ctn.tecnico.ulisboa.pt/icda-3/index.html>
- June 5**  
Angers, FR  
58<sup>èmes</sup> Journée Scientifiques de la SFPM  
June 5 - June 7  
<https://sfpm-js2019.sciencesconf.org/>
- June 10**  
Manchester, UK  
58<sup>th</sup> Annual Meeting of the Particle Therapy Cooperative Group  
June 10 - June 15  
<https://ptcog58.org/>
- June 13**  
St. Gallen  
Swiss Congress of Radiology 2019 (SCR'19)  
June 13 - June 15  
<http://www.radiologiekongress.ch/>
- July 14**  
San Antonio, USA  
AAPM Annual Meeting  
July 14 - July 18  
<https://www.aapm.org/meetings/>



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!