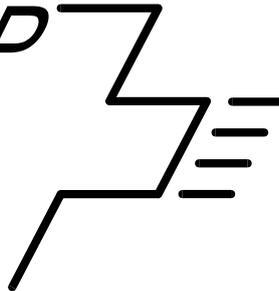


Schweizerische Gesellschaft für Strahlenbiologie und Medizinische Physik
Société Suisse de Radiobiologie et de Physique Médicale
Società Svizzera di Radiobiologia e di Fisica Medica

SGSMP
SSRPM
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BULLETIN

2/2014

Nr. 80 August 2014

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BULLETIN 80

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Cover image:

A beautiful photo montage of the total lunar eclipse that occurred on April 14-15, 2014. The photographs were taken by Sebastien Guillermaz in San Miguel, Argentina. The event was the first of four total lunar eclipses that will be observed in the 2014-2015 tetrad. The next total lunar eclipse will take place on October 8, 2014.

Read more on tetrad: <http://eclipses.gsfc.nasa.gov/OH/OH2014.html>

See more of his photos: <https://www.flickr.com/photos/sebapol/>

LETTER FROM THE EDITORS

Dear Colleagues,

This issue of the bulletin contains the first "Spotlight on" article that has been graciously written by our colleagues in Vevey. As was explained in our last issue, this new addition to the bulletin is an attempt to strengthen our Swiss radiation oncology community by familiarization and communication. We hope to highlight a new center in each bulletin and so forth until all centers have been presented. If you would like to have your center be the focus in one of the next articles please send us an email.

We would also like to announce an SSRMP bulletin competition for the best photo in medical physics. Photos can be of anything as long as they pertain to our beautiful field of medical physics. All submissions must be sent to the editors before the deadline of **November 1, 2014** to be included in the competition. A description of the photo content should accompany all submissions. The editorial staff and SSRMP board will evaluate all submissions and choose the winner. The winning photo will be placed on the SSRMP bulletin cover of the December issue. Also, a small prize will be awarded to the winning photographer.

Enjoy the rest of summer!

Nathan Corradini, Shelley Bulling, and Regina Müller



Example of the beauty hidden within medical physics! The photo was taken from submissions on the facebook page:

<https://www.facebook.com/go4PIMP>

President's letter

Dear colleagues,

Five years ago you elected me as president of our Society. With my colleagues of the board, we tried to continue the work done by our predecessors and pushed some important tasks forward. The most significant achievement is probably the creation of the new Society that is the fusion of the “old” SSRMP and the SPAMP. After five years, my opinion is that this was a good decision. Now we have a single, well organized entity with three permanent committees for science, education and professional affairs. Our visibility is better from the outside and our partners, like FOPH or SRO, have only one entity with whom to communicate. Speaking of SRO, another achievement of the SSRMP board was to improve our relationship with SRO, our natural partner in radiation oncology. Our closer connection with SRO led to the organization of a common continuing education day about stereotactic techniques and stereotactic body radiation therapy (SBRT) that will take place in Bern on the 24th of October. Please keep the date! There will be a very interesting mixed program between clinical and medical physics issues. We also reinforced our collaboration in the education field, where SRO will organize a clinical course for the candidates for the SSRMP specialization. A last important achievement has been the practical organization of the famous “Article 74 al. 7”. After some difficulties in demonstrating to our partners the utility of medical physicists in radiology departments, there is now globally a nice involvement of medical physicists in this field.

This year is special, because SSRMP is 50 years old! We will celebrate our 50th anniversary on the 12th of November in Luzern. I really encourage you to attend the anniversary celebrations because the organizing committee, chaired by Werner Roser (special thanks to all of them), has prepared a very nice program, mixing past and future. Be there or you will miss a great day!

I would like to remind you that our annual conference this year will be a Dreiländertagung meeting. Thank you to Stephan Klöck for chairing the organizing committee. The meeting will take place in Zürich from 7th to 10th of September with an impressive scientific program. Don't miss it!

The other very important reason not to miss the Dreiländertagung meeting is that our general assembly will be held there – and a new board will be elected. The elections and the board positions are open to every member and I would welcome it if you, as a member, expressed an interest in holding one of the different positions available. If you are willing to be a candidate, please send an email to Daniel Vetterli (daniel.vetterli@radioonkologie.ch). Some people have already raised their hand to show their interest in the elections. They are the following (at the moment of printing the Bulletin):

President: Peter Manser (Bern)

Chair scientific committee: Raphael Moeckli (Lausanne)

Chair education committee: Frederic Corminboeuf (Lausanne)

Chair professional affairs: Jean-Yves Ray (Sion)

Board Member: G. Lutters (Aarau), R. Menz (Basel), M. Notter (La Chaux-de-Fonds), J.-Y. Ray (Sion), H.W. Roser (Basel), W. Roser (PSI), D. Vetterli (Bienne/Biel).

You will certainly have noticed in reading that list that Stephan Klöck is missing. After five years on the board as vice-president, and many years previously on the SPAMP board, he has decided not to be a candidate. I would like to gratefully acknowledge our colleague for his long and regular commitment to our Society. Stephan will remain president of the exam commission and a member of the education commission. Thank you Stephan for your excellent work and your input during all these years and for your continued work for the education commission!

The Bulletin contains a lot of information from our Society. In the present edition a new topic called “Spotlight on...” appears where a center presents itself. This issue puts the spotlight on the new center in Vevey. If you would like to talk about your center in the next editions of the Bulletin, please volunteer by contacting the editors. This is also the case if you would like to contribute by sending reports, reviews, information, etc...

The Bulletin editors contribute to the medical physics community by compiling the information coming from members and informing you about what your Society is doing. I would like to thank Shelley, Regina, Nathan and Jean-Yves for their work.

This is my last President’s letter. I would like to tell you that I have enjoyed my role of President very much and that I have been proud to represent all of us and medical physics in Switzerland. I would like to express my gratitude to you for having elected me and trusted me in re-electing me. It has been a wonderful experience, especially because of the nice team that we formed in the board. It has been a pleasure to work with the other members of the board and I would like to thank them for the work that they have done. It is very easy to be president with such a team! Thank you a lot!

I have no doubts that the current board is leaving a clean well-ordered room for the future board that you will elect in September. I wish the future board members and especially the future president to have as much pleasure as I had during these last five years and I wish you all success in the future!

Enjoy your Bulletin, have a nice shiny summer and meilleures salutations de Lausanne!

Raphaël Moeckli



SSRMP TLD Intercomparison 2014

This year's TLD intercomparison for non-Tomotherapy machines starts in September and will be closed in November. As in 2013, the aim is to check all photon energies which are used in the institutions. The measurements are performed in a solid phantom. For more information on the measurement setup, see the article "Results of the TLD intercomparison 2013" in the SSRMP Bulletin 2/2013 on page 18.

The TLD intercomparison for Tomo machines started at the end of June. The measurement setup differs from the setup applied in the last year: The dose is measured in the "cheese phantom" which is provided to all Tomo sites by Accuray and is used in the regular QC procedures. In order to house the TLDs in the phantom, sticks with a similar outer geometry as the ionisation chambers used with the cheese phantom have been constructed. This allows crosschecking the measurement results. The plans irradiated in the intercomparison are the same plans used for Tomotherapy machine calibration. We are confident that this clinically more relevant and easy to use measurement setup will lead to better results when compared with the Perspex cylinder based setup which was used in 2013.

For the 2014 Tomotherapy intercomparison, the reference TLDs are irradiated by PTW, Freiburg. In order to get more significant data, all German institutions with Tomotherapy machines are also invited to participate in the comparison. It is also the aim to compare the reliability of the 2013 and 2014 setups. If the 2014 setup shows advantages compared to the last year's setup, it will be applied in the following intercomparisons in Switzerland – and hopefully in other countries.

Hans Schiefer, St. Gallen

Next Applied Medical Physics (AMP) Meeting

It is my pleasure to announce the next AMP meeting. This meeting is a general platform for all interested persons in medical physicists.

Traditionally, the AMP meeting is split up into two parts. In the first part, a dedicated topic is discussed while in the second part we concentrate on the current state of the different working groups of SSRMP.

Thus, please mark your calendar:

August 27, 2014, 13.15-16.45h
University of Bern, Main Building, HS 105

Detailed information will be provided by the SSRMP mailing list, only.
=> Subscribe to this mailing list now on www.sgsmp.ch

Peter Manser, Chair of SSRMP Science Committee and Chair of AMP





Venue

University of Zurich – Campus Irchel
 Winterthurerstrasse 190 • 8057 Zurich, Switzerland

Date

7–10 September 2014

Conference Website –INFORMATION & REGISTRATION

www.medphys-kongress.de

Scientific Organiser

Swiss Society of Radiobiology and Medical Physics (SSRMP)
 German Society of Medical Physics (DGMP)
 Austrian Society for Medical Physics (ÖGMP)

Conference Chair

Dr. Stephan Klöck
 UniversityHospital Zurich
 Division of Radio-Oncology, Medical Physics

Conference Organisation on behalf of the SSRMP

Conventus Congressmanagement & Marketing GmbH
 Phone +49 3641 31 16-360/-326 • medphys@conventus.de
www.conventus.de

Scientific programme • Sunday, 7 Sept. 2014

17⁰⁰–19⁰⁰ Opening ceremony
 Welcome notes
 Key note lecture • F. Pauss (Zurich/CH)
The higgs discovery at CERN – the impact of science without borders
 19⁰⁰–21⁰⁰ Get together at the industrial exhibition

Scientific programme • Monday, 8 Sept. 2014

08³⁰–10⁰⁰ • Dosimetry in radiation therapy I: Interactions
 • Particle radiation therapy I: Systems
 • Magnetic resonance imaging I: systems and methodology

10¹⁵–11⁰⁰ • Dosimetry in radio diagnostics and nuclear medicine I: nuclear medicine
 • Glocker lecture
 11³⁰–13⁰⁰ • Young Investigator Forum
 • IOMP Symposium – Medical Physics in Developing Countries
 13¹⁵–14³⁰ • Lunch symposia
 14⁴⁵–16¹⁵ • Treatment planning and dose calculation in radiation therapy I: Dosimetry
 • Hybrid systems for imaging (PET/MR, PET/CT, X/MR)
 • Radiation protection – medical physics service in clinical radio diagnostics and nuclear medicine
 • Miscellaneous topics
 16³⁰–19⁰⁰ • Annual general meetings (SSRMP, DGMP, ÖGMP)
 19³⁰–21⁰⁰ • Meet the Presidents with boards and presidents at the "Zeughauskeller"

Scientific programme • Tuesday, 9 Sept. 2014

08³⁰–10⁰⁰ • Motion management in imaging and radiation therapy I
 • Brachytherapy
 • Magnetic resonance imaging II: Modelling and Quantitation
 10³⁰–12⁰⁰ • Particle radiation therapy II: Range verification
 • Adaptive radiation therapy
 • Quality assurance for medical radiation applications I: Machine QA
 12¹⁵–13⁰⁰ • Lunch symposia
 13⁴⁵–15³⁰ • High precision and stereotactic radiotherapy
 • Dosimetry in radiation therapy II: Detectors I
 • Radiation biology and biological modeling
 15³⁰–17⁰⁰ • Image guided radiation therapy/hybrid systems
 • Treatment planning and dose calculation in radiation therapy II: clinical applications
 • Dosimetry in radio diagnostics and nuclear medicine II: radio diagnostics
 • Functional and molecular imaging

- 17⁰⁰–18³⁰ • Guided poster sessions
19³⁰ • Social evening at the "Schützenhaus Albiggütli"

Scientific programme • Wednesday, 10 Sept. 2014

- 09⁰⁰–10³⁰ • Motion management in imaging and radiation therapy II
• Quality assurance for medical radiation applications therapy II: Plan QA
• Magnetic resonance imaging III: experimental applications
- 10⁴⁵–11⁰⁰ • Award ceremony
- 11¹⁵–12⁴⁵ • Dosimetry in radiation therapy II: Detectors II
• Particle radiation therapy III: Plan QA/InVivo Dosimetry
• Medical physics as profession – international status and trends

- 12⁴⁵–13⁰⁰ • Closing ceremony

Programme for Young medical physics • Tuesday, 9 Sept. 2014

Aims and contents:

- Demonstrate career options/career perspectives in medical physics
- Help to assess career paths in respect to the general development in the field
- Help to foster contact with medical physicist from industry, hospitals and health organisations as well as researchers of academic institutions
- Identify potential of promotion for own research
- Networking of young medical physicists
- Learn skills to become a group leader



Swiss Society of Radiobiology and Medical Physics
Member of the European Federation of Organisations for Medical Physics (EFOMP) and the International Organization for Medical Physics (IOMP)

Win a free SSRMP membership in 2015!

... and the winner is: **Marc Pachoud** from Vevey!



This year all ordinary members of our society were invited to pay their current membership fee until May 15th in order to win a free membership for 2015. 62% of the ordinary members paid in due time.

The happy winner is Marc Pachoud, Medical Physicist and Group leader in the Radiotherapy department of the Riviera Chablais Hospital in Vevey.

Marc Pachoud is working in Vevey since January 2013 in the new radiotherapy department of the Riviera Chablais hospital.

Marc: "The official inauguration of this department was in June last year and after one year we have treated 400 patients. With my colleague Sarah Ghandour, we have commissioned the new Elekta Versa HD Linac with the new RayStation Treatment Planning System software. It was very interesting but at the same time a great challenge with numerous hours spent in front of the machine. We have a lot of new projects to implement in our department like for example using ultrasound for IGRT (Clarity system from Elekta).

I have three daughters and my favorite hobbies are still alpinism and skiing; when I have time."

Let me congratulate Marc, who was also member of the SSRMP board from 2007 to 2010, for his fruitful job and this little prize.

Werner Roser, Villigen PSI

50 years Swiss Society of Radiobiology and Medical Physics (SSRMP)

In 1964, the "Swiss Society for Radiobiology" was founded by 17 people of scientific standing in the fields of radiation biology, medical physics and radiation protection. Their first president was Prof. Hedi Fritz-Niggli, the internationally renowned radiation biologist. In 1980, the increasing importance of medical radiation physics was taken into account by the introduction of the new name "Swiss Society for Radiobiology and Radiation Physics". The initial restriction of the activities of the medical physicists to radiation physics was removed in the course of time. This was documented in 1988 with the new and still valid naming "Swiss Society for Radiobiology and Medical Physics" (SSRMP).

The SSRMP can therefore celebrate its 50th anniversary this year. In its occasion a symposium will be held on the

12th of November, 2014

in the Swiss Museum of Transport (Verkehrshaus) in Lucerne. There will be presentations of our different activity areas in review and in outlook. The programme can be found on the homepage of the SSRMP (www.sgsmp.ch/2014/sgsmp50.htm). In addition, about 20 medical physics units will present themselves and their specific activities with a poster. Participation is free for members due to several generous sponsors to whom we are very grateful. However, an on-line registration (www.sgsmp.ch/2014/sgsmp50.htm) is necessary in order to organise the catering. After the symposium a joint dinner is planned near the main railway station of Lucerne.

In addition, a golden jubilee booklet will be provided. It will contain contributions about the history and activities of the society, summaries of the lectures of the jubilee symposium in Lucerne as well as short presentations of almost all our members' institutions. The booklet will be handed out at the jubilee symposium in Lucerne.

Furthermore, it is planned to present the profession of the medical physicist in the public media.

The organising committee thanks the presenters and is hoping that many of the society's members will attend the jubilee symposium in Lucerne.

Werner Roser, Regina Seiler, Wolf Seelentag, Jakob Roth



Location: Verkehrshaus, Lidostrasse 5, CH-6006 Luzern
Auditorium im Hans Erni Museum

Date / Time: Wednesday, 12th of November, 2014 / 09:15 - 16:00

Program:

Lectures may be held in German, French or (preferably) English.

09:15 - 09:45		<u>Arrival, coffee, croissants</u>
09:45 - 10:00		<u>Opening</u>
10:00 - 12:15		<u>Presentations part 1</u>
	Jakob Roth	History of SSRMP
	Walter Burkard	Radiation Biology (past)
	Martin Pruschy	Radiation Biology (future)
	Bernhard Rassow	Medical Optics
	Léon André	Radiation Oncology (past)
	Raphaël Moeckli	Radiation Oncology (future)
	Norbert Dillier	Audiology
	Wolf Seelentag	Cooperation of SSRMP with other societies & organisations
12:15 - 13:15		<u>Buffet lunch</u>
13:15 - 14:25		<u>Presentations part 2</u>
	Sébastien Baechler	Radiation Protection
	Horst Nemeč	Nuclear Medicine (past)
	Frédéric Corminboeuf	Nuclear Medicine (future)
	Peter Bösiger	Magnetic Resonance Imaging
14:25 - 15:00		<u>Coffee break</u>
15:00 - 15:50		<u>Presentations part 3</u>
	Hans W. Roser	Diagnostic Radiology (past)
	Marco Stampanoni	Diagnostic Radiology (future)
	Wolf Seelentag	Genealogy - with Theophil Christen as example
15:50 - 16:00		<u>Closing</u>
18:00 -		A joint <u>dinner</u> is planned (not sponsored): please indicate your interest with your registration.

Poster exhibition: About 20 medical physics units will present themselves.

Registration: is absolutely essential, though participation (incl. both coffee and lunch) is free of charge (for members).
Registration through www.sgsmp.ch/2014/anmeldung.asp

Contact: Werner Roser, Villigen PSI (Tel.: +41 56 310 35 14, Mail: werner.roser@psi.ch)



The DFG Research Training Group 1739 invites
Symposium
40th Birthday of the Institute of Medical Radiation
Biology
80th Birthday of Prof. Dr. Dr. h.c. Christian Streffer
Farewell to Prof. Dr. Wolfgang-Ulrich Müller
 9 October 2014

Dear Colleagues and Friends,

To celebrate the 40th Birthday of the Institute of Medical Radiation Biology and the 80th Birthday of Prof. Dr. Dr. h.c. Christian Streffer, honorary member of SSRMP, who founded the Institute back in 1974, the DFG financed Research Training Group (Graduiertenkolleg) **GRK1739** plans a Symposium in the Audimax of the Medical faculty of the University Duisburg-Essen on Thursday, October 9th 2014, 12:00 –19:30.

We take this opportunity to also say farewell to Prof. Dr. W.-U. Müller who retired last year. We prepare a program nostalgically looking in the great past, while pointing to a bright future. With two Institutes focusing on clinical and cellular radiation biology, a well-known Radiation Therapy Department and a Proton Centre, strengthened by the funding of GRK1739, Essen is further developing to an important hub of Radiation Biology and Therapy in Germany.

You are invited not only to reflect and honor with us the past, but also to see present activities and future plans. The evening will close with a keynote lecture by William F. Morgan, Ph.D., D.Sc from the Pacific Northwest National Laboratory, USA.

We are looking forward seeing you in Essen,

Prof. Dr. George Iliakis
 Prof. Dr. Verena Jendrossek
 Prof. Dr. Martin Stuschke
 Prof. Dr. Beate Timmerman

Venue:
 Audimax (plan D/2)
 Universitätsklinikum Essen
 Hufelandstr. 55
 45147 Essen

Organisation RTG 1739:
 Gabriele Siedenburg
 Ivonne Schulte
 Virchowstr. 173, 45122 Essen
 tel: +49 201 723-4234, -4740
 Gabriele.siedenburg@uni-due.de
 Ivonne.schulte@uk-essen.de

Program

<p>12:00-12:30 Registration / Snacks and Drinks</p> <p>12:30-12:45 Grand Opening Prof. Dr. Ulrich Radtke, President Prof. Dr. med. Jan Buer, Dean Prof. Dr. mult. Eckhard Nagel, Medical Director</p> <p>12:45-13:30 Farewell Prof. Dr. Wolfgang-Ulrich Müller <i>Laudatio:</i> Prof. Dr. Rolf Michel - Reflections</p> <p>13:30-15:30 80th Birthday Prof. Dr. Dr. h.c. Christian Streffer <i>Laudatio:</i> Prof. Dr. Christoph Reiners <i>Memories:</i> Peter Vaupel, Nikos Zamboglou, Andrzej Wojcik, Moritz A. Konerding. <i>Achievements:</i> Prof. Dr. Michael Molls: “Thoughts on Personalized/Individualized Medicine in Oncology”</p> <p>15:30-16:00 Coffee Break</p>	<p>16:00-17:00 “Present and Future of Radiation Research and its Clinical Applications in Essen” Verena Jendrossek George Iliakis Beate Timmermann Martin Stuschke</p> <p>17:00-18:00 Keynote Lecture William F. Morgan, Ph.D., D.Sc, Pacific Northwest National Laboratory, USA “Towards the Radiation Biology of Tomorrow”</p> <p>18:00-19:30 Closing remarks followed by a small Reception</p>
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Please register by September 15:
 Ivonne.schulte@uk-essen.de



Progress report from the working group on reference dosimetry

The SSRMP working group (WG) on reference dosimetry is now already one year old. This group has 14 members and is divided into sub-groups, each of which has the task to review and update, where necessary, the Swiss dosimetry protocols for megavolt photon (MV), electron (MeV) and kilovolt photon (kV) beams. Over this past year the whole group met three times and there were five sub-group meetings, during which there have been many useful and interesting discussions. In what follows, the reasons for which the WG was established are summarised and some initial findings of the work are presented.

We would greatly appreciate if you could review the following information and provide us with your thoughts and comments on this, as well as on any other aspect that you consider important for the forthcoming update to the Swiss reference dosimetry recommendations. This includes suggestions on the overall structure of the recommendations, corrections to the text and obsolete or missing information.

Recommendations Nr 8: MV photon dosimetry

The introduction of flattening filter free (FFF) beams has led to discussion on the choice of appropriate beam quality specifier for the calculation of chamber-specific beam quality correction factors k_Q , which correct for the differences in beam quality between the reference beam at the standards laboratory and the user beam Q. The Swiss dosimetry recommendations for MV photons, follows the formalism of the IAEA TRS-398 (IAEA 2000) international dosimetry code of practice, where the beam quality specifier is in terms of tissue phantom ratio TPR_{10}^{20} .

Xiong and Rogers (2008) showed that in FFF beams the relationship between the Spencer-Attix water-to-air restricted stopping power ratio and TPR_{10}^{20} changes by 0.4% to 1%, as compared to conventional beams with flattening filter (WFF). Namely, the same value of TPR_{10}^{20} corresponds to a smaller value for the stopping power ratio for FFF versus WFF beams. They recommended that if the TPR_{10}^{20} is to be used as beam quality specifier when calibrating FFF beams, then existing values of k_Q need to be reduced by about 0.5%. It was also shown that in FFF beams the relationship between stopping power ratio and beam quality index in terms of %dd(10)x, which is the beam quality specifier in the AAPM TG-51 dosimetry code of practice (Almond et al. 1999), is retained to within 0.4%. This is because for the same nominal energy an FFF beam has a softer spectrum, leading to lower values for %dd(10)x with a corresponding increase in the stopping power ratio, and both effects cancel each other out. Hence, it was concluded that the values of k_Q given in TG-51 could still be used without additional corrections.

These findings have led to the situation that in Switzerland some institutes calibrated their FFF beams following the TG-51 dosimetry protocol, whereas others followed the current Swiss recommendations and calculated k_Q values using the relationship provided on the calibration certificates by METAS either reducing these by 0.5% or without any change. Because of this variation in clinical practice, it was considered appropriate to compare k_Q factors calculated according to the formalism given by METAS (which is based on TPR_{10}^{20}), according to TRS-398 (also in terms of TPR_{10}^{20}) and according to TG-51 (in terms of %dd(10)x). Six institutes (a total of 14 FFF beams) participated in this comparison for 6MV (X6FFF) and 10 MV (X10FFF) beams. The information provided were the values of %dd(10)x, TPR_{10}^{20} , k_Q values (for those using the formalism by METAS) and the corresponding chamber type used, which was a cylindrical 0.6cm³ ionization chamber (models PTW 30013 or PTW 30006).

We found that the k_Q s calculated following the Swiss protocol, TRS-398 and TG-51 were all within 0.45%. The differences between institutions were small. The mean difference between Swiss/METAS and TG-51 was 0.18 % for both energies (X6FFF and X10FFF). This indicates that the Swiss/METAS formalism to calculate k_Q could be used without corrections. The group considers appropriate to extend this investigation to include different chamber types as well as carry out the measurement on FFF beams

from different types of linear accelerators. In the current investigation only data from Varian TrueBeam linear accelerators were included.

	k_Q (TG-51)	k_Q (METAS)	k_Q (TRS-398)
X6FFF	0.9961 +/- 0.0009	0.9943 +/- 0.0004	0.9959 +/- 0.0003
X10FFF	0.9844 +/-0.0001	0.9826 +/- 0.0002	0.9870 +/- 0.0002

Recommendations Nr 10: electron dosimetry

In Appendix 2, paragraph 2.4 of the new ordinance of measurement equipment for ionizing radiation (Verordnung des EJPD über Messmittel für ionisierende Strahlung (StMmV); 1. Jan. 2013), a statement is included on the range of beam quality indices of electron beams under which reference dosimetry instruments must be calibrated. The requirement is that the reference instrument must be calibrated at beam quality indices that differ in steps of $R_{50} = 2 \text{ g/cm}^2$ so that absorbed dose-to-water calibration coefficients can be interpolated from available values. Adhering to this requirement of interpolating between available values strictly means that the determination of calibration coefficients for the reference instrument and thus the calibration of some low (<5.5 MeV) and some high (>22 MeV) electron beams is not be permitted. A letter was written to the BAG requesting further information to clarify this and to understand the legal implications when using electron beams which fall slightly out of the range of beams in which the institute's reference instrument has been calibrated,.

Recommendations Nr 9: kV photon dosimetry

Several points were identified to be addressed in the revised recommendations. Discussions amongst members within the group and information from the literature indicated that clear guidance on the measurement of beam quality (half-value layer) is needed, in terms of choice of irradiation geometry and measurement equipment.

In the determination of dose in the medium kV region (tube potentials > 100 kVp) some of the information and data included in Recommendation No. 9 are no longer relevant to current practice. Guidance on corrections to account for the influence of the stem effect may need to be included, when dose is to be determined at fields other than the one in which the reference instrument was calibrated (Ma et al. 2001).

For dosimetry in the low kV region (tube potentials \leq 100 kVp) the influence of contaminant electrons in the determination of the calibration coefficient for the reference instrument at the standards laboratory is not being considered. Despite this, the current recommendations suggest that this effect could be corrected. This point needs to be clarified with METAS and the recommendation ought to be revised to reflect actual practice.

Although the recommendations are for the determination of reference dose, in the medium energy range the accurate measurement of relative depth dose directly influences the delivery of the prescribed dose at clinically relevant depths, which in most cases are at or are close to the patient surface (beams in this energy range are calibrated at the depth of 2 cm in water). For this reason, it is considered appropriate that the revised recommendations also include guidance on the measurement methodology of percentage depth doses.

Reference dosimetry for Tomotherapy

It is currently under discussion if there should be a separate recommendation for Tomotherapy or if it should be included within the Recommendation No. 8.

A recent publication ([Thomas, Aspradakis et al. 2014](#)) provides an addendum to the 1990 UK MV dosimetry code of practice. Specifically, the UK CoP relates calibrations to the national absorbed dose calibration service, which gives calibrations for a range of beam qualities with calibration coefficients

tabulated against beam quality index, and not to a single beam quality of ^{60}Co . This publication details all reference dosimetry-related issues for Tomotherapy, including selection of reference irradiation conditions, determination of secondary standard chamber calibration (including the aforementioned situation of having a chamber calibration in a WFF beam used for measurements in a Tomotherapy FFF beam), and transfer of the calibration coefficient from secondary standard to field chamber. This document is suggested as basis for further discussion on reference dosimetry issues regarding Tomotherapy.

The 2014 Tomotherapy reference dosimetry intercomparison is adapted with experience from the previous year. This year's intercomparison will be based on measurement of the site reference plans, that are also used for device calibration in the cylindrical water-equivalent phantom (the 'cheese' phantom). The dosimetric test of reference plans with the cheese phantom in a complete end-to-end approach is considered to have some obvious advantages, primarily due to its shape and size. For that purpose, "measurement sticks" for chamber equivalent placement of TLDs as inserts for the cheese phantom were manufactured. Preliminary tests performed in St. Gallen support the expectation that a cheese phantom based measurement setup is more suitable for absolute dose intercomparison than the small PMMA cylinder phantoms used 2013. In order to get sufficient reliable data, our German colleagues are also invited to participate in the intercomparison.

Output differences from measurements under plan class specific reference conditions, especially between helical-, direct- and dynamic jaw- treatment mode can be observed. A further aim of the Tomotherapy dosimetry intercomparison is to obtain a broader view on plan class specific dose output, and perhaps establish plan class specific dose output correction factors for clinical use.

References

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Members of the SSRMP working group on reference dosimetry:

<i>MV beams</i>	<i>MeV beams</i>	<i>kV beams</i>
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L Henrich	F Hasenbalg	T Buchillier
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V Vallet	A Steiner	G Kohler
K Buchauer		M Aspradakis
A Steiner		
S Lang		

Maria Mania Aspradakis, Federico Hasenbalg, Konrad Buchauer, Samuel Peters and Stephanie Lang

Conference Report: The SRS/SBRT Scientific Meeting 2014

The Radiosurgery Society (RSS) hosted the SRS/SBRT Scientific Meeting in Minneapolis, Minnesota on May 7-10th. The RSS has objectives of improving results achieved in the fields of SRS/SBRT through scholarly exchange, as well as sharing clinical information to promote protocol development and to facilitate the development of treatment methods.

The clinical part of the scientific meeting was organized into sessions with a dedicated clinical indication: gastrointestinal, genitourinary, breast and thoracic, spine head & neck and intracranial. The physics part of the meeting was divided into oral abstracts covering many issues involving SRS/SBRT and also included two sessions dedicated to assurance and safety and motion management. A highlight to each year's meeting is the general session entitled "The Showdowns" in which scientists and clinicians debate on a series of specific topics. This year's topics were the role of radiobiology in SRS/SBRT, treatment of early-stage breast cancer, and the treatment of oligometastases. On the final day, the meeting was divided into sessions on performance and quality improvement by looking at case studies and outcomes analysis and radiobiology.

The meeting was well organized, the speakers knowledgeable, and the talks informative and well presented. The following are some points I find worth highlighting.

Timothy Solberg (Univ. of Pennsylvania) gave a wonderful but sobering presentation entitled "Quality and Safety in Stereotactic Ablative Radiotherapy: Lessons Learned". The talk was a comprehensive review of accidents involving SABR from a historical point-of-view and delved into the reports/recommendations that have come from these lessons learned. The talk stressed the need for quality control and safety in clinical SABR programs and its increasing importance now that hypofractionation and dose escalation are becoming more ubiquitous. Prof. Solberg provided a trove of information to help establish adequate quality control and safety in a clinical SABR program.

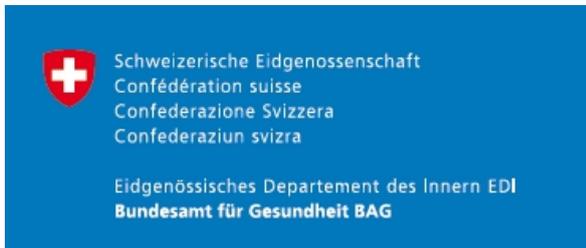
Søren Bentzen (Univ. of Maryland) gave a very articulate introduction to the showdown debate on the role of radiobiology in SRS/SBRT. He concluded his presentation stressing the following points: there is a dose-volume trade off at the acceptable limits of NTC, as delivered doses to tumors increase the time/fractionation becomes much less important, target and patient selection are very important factors. Simon Lo (Case Western Reserve Univ.) and J. Martin Brown (Stanford Univ.) then playfully debated the current evidence on whether or not or how much radiobiology should matter in SRS/SBRT. A final polling of the audience suggested that the community is split on radiobiology's role for these treatments.

The showdown on early-stage breast cancer treatment was between Dr. Jonathan Haas (Winthrop Univ. Hosp.) and Dr. Eleanor Harris (East Carolina Univ.). Specifically, the two debated on whether the evidence is in favour or against APBI for early-stage breast cancer. The debate was well-done and lively on behalf of both participants. There was no clear winner. One main conclusion was that 5 yr data on APBI is showing equivalent control to standard fractionation but long-term data is unknown and still needed.

Overall, I found the meeting very worthwhile and I would recommend it to other colleagues.

Nathan Corradini, Clinica Luganese

BAG 2013 annual report discusses clinical audits



(Excerpt taken from pages 43-44)

Audits dans les instituts pratiquant la brachythérapie

Les traitements radio-oncologiques par brachythérapie ne sont appliqués que dans des cas très spécifiques et concernent donc peu de patients. Cette thérapie, au cours de laquelle une source radioactive est placée à proximité de la tumeur (en grec βραχυς signifie court, proche), conduit à une exposition extrêmement élevée du patient. La qualité des traitements dépend étroitement d'une collaboration bien structurée et précise entre les professionnels impliqués (radio-oncologues, physiciens médicaux, anesthésistes, techniciens en radiologie médicale (TRM) et assistants médicaux). Les audits réalisés en 2013 dans les instituts pratiquant la brachythérapie ont à la fois révélé des points faibles, indiqué des possibilités d'amélioration et permis de vérifier l'adéquation des dispositions légales de radioprotection ainsi que de l'assurance de qualité. Les données ne sont pas encore totalement évaluées, cependant, des conclusions importantes sont déjà disponibles :

- Le nombre de patients soignés par brachythérapie a baissé dans les dernières années, la téléthérapie percutanée étant de plus en plus privilégiée. Alors que le nombre de patients traités à l'iridium-192 (par Afterloading) n'a que faiblement diminué, le nombre de personnes traitées avec des Seeds d'iode-125 a plus fortement baissé
- Dans plusieurs instituts, la sécurité contre le vol des appareils Afterloading n'était pas suffisante
- Plusieurs instituts avaient entreposé les sources radioactives (Seeds d'iode-125, sources de calibration, etc.) dans des conditions insatisfaisantes, de sorte que la protection contre l'incendie n'était pas assurée (une résistance au feu de classe F60 est exigée pour le lieu de stockage)

- Les pompiers n'étaient pas suffisamment informés sur le nombre et le type de sources radioactives utilisées ou entreposées

- L'instruction du personnel sur les mesures de protection d'urgence qui sont à mettre en oeuvre en cas de blocage d'une source dans un appareil Afterloading était partiellement insuffisante.

Tous les instituts pratiquant la brachythérapie en Suisse ont été audités jusqu'à la fin de l'année 2013. L'OFSP va maintenant analyser les résultats et les discuter avec les sociétés professionnelles concernées.

Audits cliniques en radiologie, radio-oncologie et médecine nucléaire

La dose moyenne de rayonnement délivrée à la population suisse par les applications médicales a fortement augmenté au cours des dernières années. Afin de minimiser les expositions non justifiées et d'optimiser les procédures et les ressources, l'OFSP projette d'introduire des audits cliniques en radiologie, en radio-oncologie et en médecine nucléaire. Ces audits consistent à évaluer systématiquement, par le biais de Peer Reviews (expertise par des collègues professionnels), les procédures radiologiques et, si nécessaire, à améliorer la pratique professionnelle.

L'OFSP a mis sur pied un groupe d'experts comportant des médecins, des physiciens et des TRM. Au cours de plusieurs ateliers, ces experts ont élaboré, dans le cadre de la révision de l'ordonnance sur la radioprotection, un projet de base légale ainsi qu'un concept pour des audits pilotes. A l'heure actuelle, les experts fixent d'une part des contenus concernant certains thèmes prioritaires en accord avec les sociétés professionnelles, et prennent d'autre part contact avec des auditeurs et des organisations intéressées. Dès que les contenus des audits pilotes auront été finalisés, l'OFSP consultera des experts reconnus sur le plan international en vue d'évaluer le contenu proposé. Après une phase pilote prévue en 2015, les contenus d'audit seront adaptés et élargis à un plus grand nombre d'institutions concernées. A partir de ce moment-là, on envisage de déléguer la coordination des audits à un service central qui sera en contact avec les organisations auditées et les auditeurs et qui fixera les contenus prioritaires. Les premiers audits officiels démarreront vraisemblablement en 2017.

The document can be downloaded in German or French in its entirety at:

<http://www.bag.admin.ch/themen/strahlung/00043/00065/02236/index.html?lang=fr>

Special Dose Report on Pacemakers



The document can be downloaded at the following link:

http://www.vde.com/de/Technik/vdemedtech/Publikationen/Documents/VDE_MedTech_Expertenbeitraege_Spezial_Juni.pdf

Werner Roser, Villigen



Cheers! Some of our Swiss colleagues enjoying their time on the shores of Lake Champlain during the 2014 AAPM Summer School on SBRT/SRS in Burlington, Vermont. The report will be in the next bulletin!

Shelley Bulling, Genève



CALENDAR 2014

- 20-24 July AAPM 56th Annual Meeting
Austin, USA <http://www.aapm.org/meetings/2014AM/>
- 04-06 September Monte Carlo Methods in Radiation Therapy
Oxford, UK <http://montecarlo-method-course.weebly.com/>
- 07-10 September **Dreiländertagung**
Zurich, CH Joint Conference of the SGSMP, DGMP, ÖGMP
<http://www.medphys-kongress.de/>
- 11-13 September 8th European Conference on Medical Physics (ECMP2014)
Athens, Greece <http://www.efomp-2014.gr/>
- 14-17 September ASTRO 56th Annual Meeting
S Francisco USA <https://www.astro.org/Meetings-and-Events/2014-Annual-Meeting/Index.aspx>
- 14-17 September Annual Meeting of the German Biophysical Society
Lübeck, Germany <http://www.biophysical-congress.de/>
- 20 Oct-29 Nov European School of Medical Physics 17th session
Archamps, FR <https://espace.cern.ch/esmp/SitePages/Home.aspx>
- 12 November **SGSMP 50th Anniversary Celebration**
Lucerne, CH <http://www.sgsmp.ch/2014/sgsmp50.htm>
- 30 Nov-5 Dec RSNA Annual Meeting
Chicago, USA <http://rsna.org/>



And please, if you participate in any conference / meeting, think of writing a few lines or sending a picture for the “recent meetings” section.

THANK YOU!



Vevey



Centre de cancérologie de l'hôpital Riviera Chablais

About the center

The project of the new center began at the end of 2011 and the construction of the hospital started at the beginning of 2012. The linear accelerator was installed at the start of 2013 and the first patient was treated on the 26th of June 2013.

About the team

The team is composed of two physicists, three physicians, six technicians, three secretaries and two nurses. After less than one year, we are treating around 40 patients per day; this means around 500 patients per year.

In parallel with clinical activity in radiotherapy, the physics group is involved in radiology to provide services related to Article 74.

Equipment and techniques

In this first phase of the project, we have one Elekta Versa HD linear accelerator. This machine was the first of its kind in the world to be commissioned; it was during the ESTRO 2013 in Geneva. We treat all localizations, with more than 80% of the treatments using VMAT technique.

We use the Response™ automatic gating system connected to the ABC™ (Active Breathing Coordinator) system from Elekta. We have started SBRT treatments for lung tumors using the high dose rate capability of the machine (Flattening Filter Free). For that type of treatment, and depending on the clinical requirements, we are treating with breath-hold or in free breathing. For free-breathing treatments, we perform a 4D-CBCT (Symmetry from Elekta) before treatment to be sure that the target is inside the defined ITV. That type of imaging allows us to check the tumor movement before delivering the daily fraction.

As a treatment planning system, we are using RayStation from RaySearch Laboratories. To optimize the plan quality and the patient workflow, we have started to use the Multi Criteria Optimization and the Biological Optimization algorithms from RayStation.

For patient safety, we are using the Identify™ technology from Elekta. Identify™ uses RFID technology and verifies the patient identity and all the immobilization devices that have to be used for the treatment. Using optical technology, Identify™ checks the positions of these devices on the couch in relation to the isocenter position. Our department was the first to use this technology in the clinic.

Projects and developments

The Centre de cancérologie of Riviera-Chablais is a clinical reference site for RaySearch Laboratories and Elekta. In collaboration with Elekta, we will start implementing the Clarity™ System from Elekta

Spotlight On

which is an ultrasound device for repositioning the patient before treatment. That system will replace the standard CBCT for patient repositioning on some defined localizations before the fraction delivery.

Also, we intend to implement in our clinic the “Treatment Adaptation” feature from RayStation to adapt plans to patient specific changes that are unaccounted for in the initial treatment plan.

From the beginning, it was a wish to be completely paperless and, with our Elekta collaboration, we have configured MosaiQ (EMR and R&V software) to reach that goal. Today we are proud to say that this goal has been achieved and that we have optimized the patient workflow by using dynamic worklist and that all the clinical and technical information is archived and accessible from MosaiQ.

Our department is recognized as a training center for the FMH certification and the MTR School.



Marc Pachoud and Sarah Ghandour



...cont. from Bulletin No. 79

Arie van 't Riet gave me the following reply regarding how he does his photography:

Hello Nathan,

Thanks for your interest in my x-rays.

First of all. My pictures are not made in the hospital. I have my own lab with x-ray equipment and license. I only work with dead animals (mostly traffic victims).

The x-ray tube I use is a Machlett OEG50. I estimate it to be from about 1960.

Enraf generator. Graetz circuit max. 50 kV.

Operation. 15 mA, max. 50 kVp, filtration depending on kVp 0 mm Al – 0.5 mm Al

Ssd ca. 120 cm

Film X-Omat V (out of production now, but I have a lot in stock)

Exposure time a couple of minutes (ca. 3600 mAs)

Agfa Curix 60 developing machine.

Vidar VXR-16 digitiser

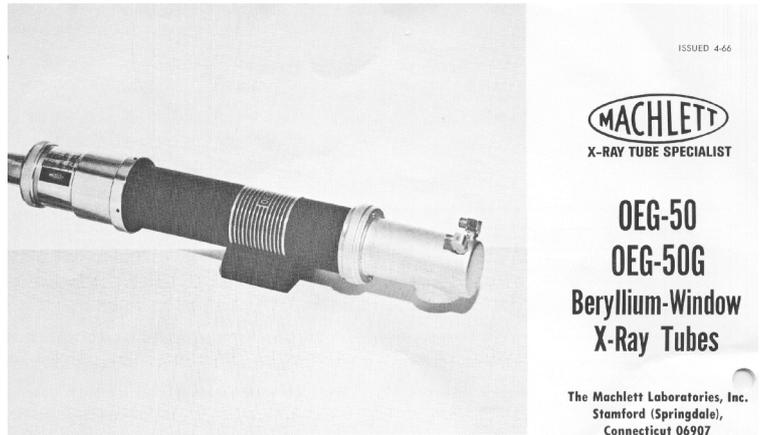
With the tube and generator it is possible to work with very low energy. About 5 kVp is used for very thin objects.

If I can be of any further help, please don't hesitate to contact me.

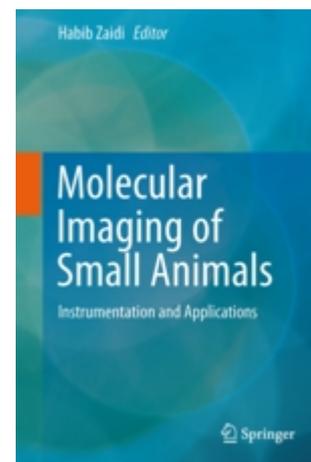
with kind regards,

Arie van 't Riet

www.xrart.nl



New from Springer



Molecular Imaging of Small Animals: Instrumentation and Applications

Zaidi, Habib (Ed.)

2014, XII, 760 p. 289 illus., 157 illus. in color.

ISBN 978-1-4939-0893-6

<http://www.springer.com/biomed/pharmacology+%26+toxicology/book/978-1-4939-0893-6>

This book reviews the basic principles and recent advances in multimodality small-animal imaging technology and their application in biomedical research. Driven primarily by the widespread availability of various small-animal models of human diseases replicating accurately biological and biochemical processes *in vivo* and the noteworthy sophistication of multimodality small-animal imaging instrumentation, the technology is still in an embryonic stage. This is a relatively new yet rapidly expanding field that has excellent potential to become a powerful tool in biomedical research. Although scientific studies involving living animals have origins dating back almost to the pioneering work of Aristotle and his original dissections, modern animal studies are perhaps a century in the making, and the use of multimodality molecular imaging in preclinical research has only recently emerged as a promising approach for biomedical research and drug development. *In vivo* small-animal imaging is nowadays playing a pivotal role in the scientific research paradigm enabling to understand human molecular biology and pathophysiology using, for instance, genetically engineered mice with spontaneous diseases that closely mimic human diseases.

With Chapters written by recognised authorities in the field, the book covers the entire range of preclinical multimodality molecular imaging from basic principles of scintillation and solid-state detectors and photodetectors to various steps required for designing high resolution standalone preclinical imaging devices and challenges to design multimodality units combining 2 more imaging modalities in a single gantry. Other Chapters discuss techniques used to realign multimodality images and to extract quantitatively accurate data. An effort has also been made to place the reviews provided in this volume in a broader context. The effort to do this is reflected by the inclusion of Chapters that address latest developments in tracers and molecular imaging probes and the application of preclinical imaging in different areas including cardiology, neurology and psychiatry, oncology, gene expression, inflammation and infection and drug development and illustrate them with some useful features and examples. Other contributions describe issues closely related to animal handling and preparation mode and type of anesthesia administered, as well as the mass of the injected tracer to optimize animal scanning.

IMPRESSUM

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CALL FOR AUTHORS

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

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

The easiest way to send your document is as a MS Word document via email to one of the editor addresses above.

Deadline for submissions to Bulletin No. 81 (03/2014) : 11.2014

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