

SSRMP Annual Scientific Meeting 2018

22th and 23th November 2018

CHUV – Lausanne



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

SGSMP
SSRPM
SSRFM

PLAN
VISUALIZATION

PLAN
EVALUATION

PLAN
VERIFICATION

AND
3D Monte Carlo

THERE IS A NEW INTELLIGENCE IN TOWN.

VERIQA

MISSION: PATIENT QA

STARRING



VISUALIZATION



EVALUATION



VERIFICATION



AND
3D MONTE CARLO

PTW DOSIMETRY INTELLIGENCE PRESENTS A ONE-STOP SOLUTION PRODUCTION "VERIQA SMART PATIENT QA" FEATURING ONE SINGLE MODULAR PLATFORM
FULLY AUTOMATED WORKFLOWS · FAST WEB-BASED ACCESS TO RESULTS · INDEPENDENT MONTE CARLO DOSE CALCULATIONS
4D PHANTOM MEASUREMENTS AND TRACK-IT DATA MANAGEMENT · ALL IN ONE MULTI-TASKING PLATFORM

COMING SOON

WWW.VERIQA.DE

PTW

Bienvenue à Lausanne

Nous nous réjouissons de vous accueillir à Lausanne dans le cadre de notre congrès annuel les 22 et 23 novembre 2018.

Nous avons préparé un programme attrayant dans tous les domaines de la physique médicale. L'automatisation et l'intelligence artificielle seront les sujets principaux du congrès et seront abordés par deux conférenciers invités de renom. Ce programme est complété par un grand nombre d'exposés des membres de notre société. Nous remercions à avance tous les conférenciers.

L'assemblée annuelle de la SSRPM aura lieu le jeudi 22 novembre 2018 à 16h30. Ce sera l'occasion de faire le point sur la position de la physique médicale en Suisse et de renouveler les membres de notre comité.

Je remercie chaleureusement nos sponsors pour le soutien financier. Sans eux, le congrès ne pourrait pas avoir lieu gratuitement pour nos membres.

Au nom du comité d'organisation, je vous souhaite un excellent congrès.

Pour le comité d'organisation



R. Moeckli

General Informations

Location

CHUV - Centre Hospitalier Universitaire Vaudois
Auditoire BH08 3 - Charlotte Olivier
Rue du Bugnon 44
CH 1011 Lausanne

Organising Committee

R. Moeckli (chair), P. Manser, F. Bochud, F. Verdun, C. Bailat, J. Damet, V. Vallet

Contacts

Nicole Tille (Administration)

Nicole.Tille@chuv.ch, tel. : +41 21 314 82 41

Raphaël Moeckli (General organisation)

Raphael.Moeckli@chuv.ch, tel. : +41 21 314 46 18

Access

By train : Arrival to Lausanne railway station – Métro M2 in front of the station, direction « Croisettes », exit station « CHUV ».

By car : Highway exit « Lausanne-Vennes » ; follow direction « hôpitaux » ; parking very difficult near CHUV ; public parking expensive.

Hotel

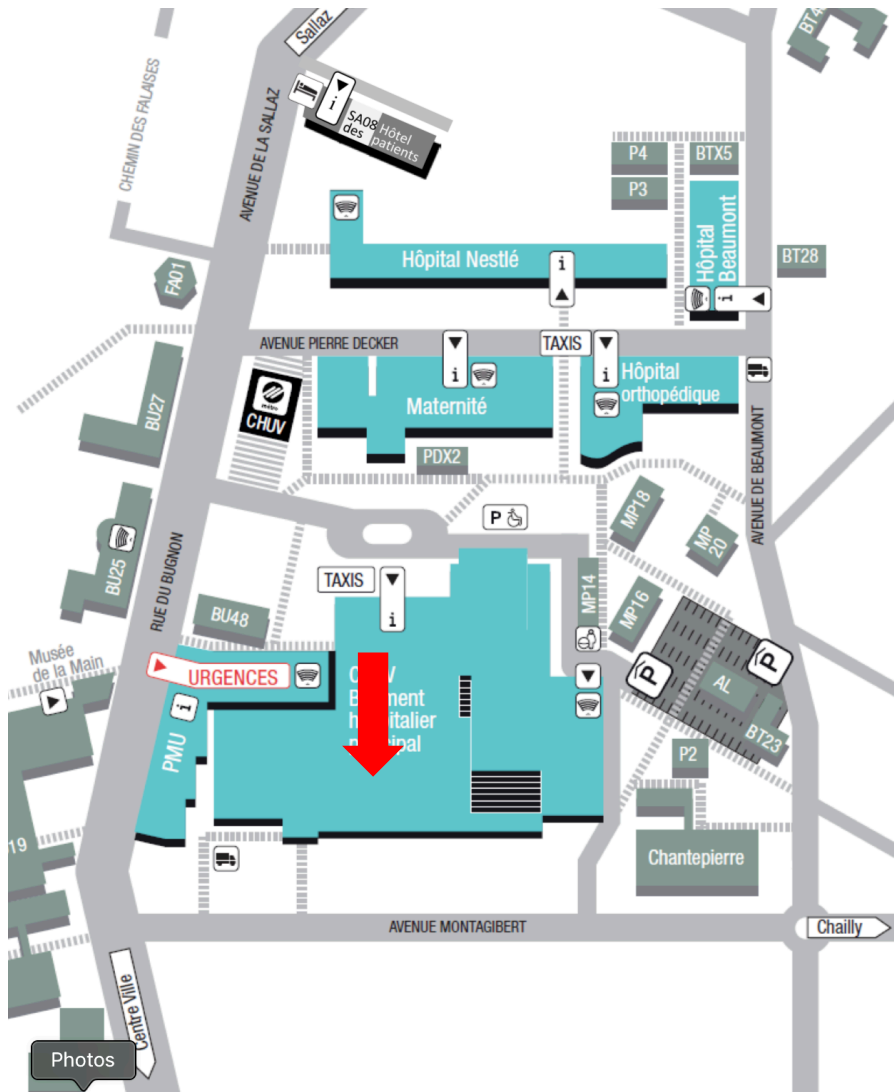
Please contact Lausanne Tourisme

www.lausanne-tourisme.ch, tel : +41 21 613 73 73.

Diner

The evening diner will take place at « Chalet Suisse » <http://www.chaletsuisse.ch>

CHUV



Chalet Suisse



Only a few minutes from the center of Lausanne.

Motorway to Lausanne-Nord, exit Vennes

Metro + Bus
Section Grand-Vennes, "Signal" stop

~ 18:34 m2 18:39	CHUV Lausanne Lausanne-Gare Riponne-M.Béjart
~ 18:41 7 18:43	Riponne-M.Béjart Pully, Val-Vert Tunnel
~ 18:50 16 18:56	Tunnel Grand-Vennes Signal

Exhibitors and sponsors

Accuray

Brainlab

Conmedica/Scandidos

Elekta

Meditron

PTW

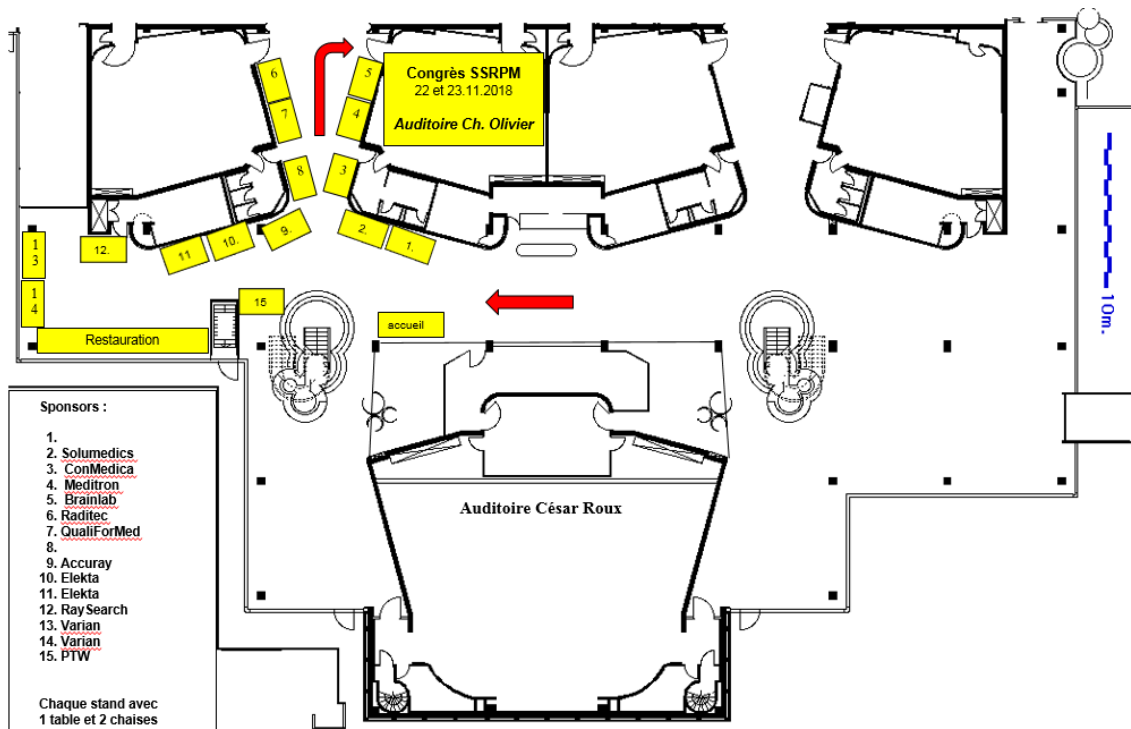
Qualiformed

Raditec

RaySearchLabs

Solumedics

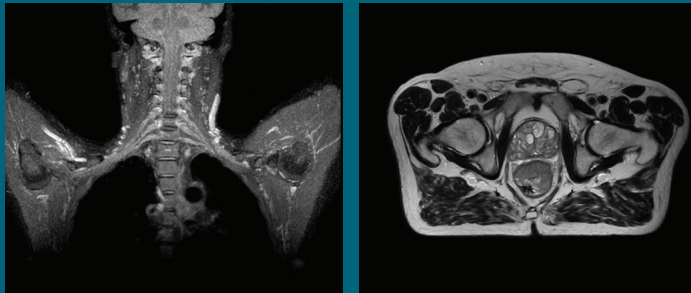
Varian



Elekta Unity Uncompromised.

See clearly during treatment
to attack the tumor and
protect the patient.

Two worlds, one future.



Captured on Elekta Unity
during 2018 imaging studies



[elekta.com/unity](https://www.elekta.com/unity)

Elekta Unity has CE mark and is pending 510(k) premarket clearance
and is not available for sale or distribution in all countries.

LADMRL180216 v2.0 © 2018 Elekta AB (publ.)

 **Elekta**

Program

Thursday 22nd Novembre

- 0900 - 1000 **Registration**
- 1000 - 1015 **Opening of the meeting**
R. Moeckli, Organising committee, Lausanne
P. Manser, SSRMP president, Bern
- 1015 - 1215 **Radiotherapy I**
Chair : M. Jaccard, Genève
- 1015
U. Schneider, Hirslanden Zürich
Tumor Size can have an Impact on the Outcomes of Epidemiological Studies on Second Cancers after Radiotherapy
- 1030
N. Corradini, Clinica luganese, Lugano
Accuracy of dynamic jaw field widths on TomoTherapy
- 1045
C. Winterhalter, Paul Scherrer Institute, Villigen
Replacing patient specific quality assurance measurements with log file based Monte Carlo simulations for proton therapy
- 1100
R. Kueng, Inselspital, Bern
Dosimetric implications of Geant4 version changes for proton radiation therapy
- 1115
N. Bizzocchi, Paul Scherrer Institute, Villigen
Spot and layer spacing optimization for proton pencil beam scanning with Eclipse TPS
- 1130
Z. Girbau, Kantonsspital Aarau, Aarau
Is Monte Carlo planning really justified in intracranial radiosurgery?
- 1145
P. Gonçalves Jorge, Institut de Radiophysique, Lausanne
Beam monitoring through out-of-field measurements in a pulsed electron beam at ultra-high dose-rate
- 1200
N. Koutsoulevis, Hôpital Universitaire, Geneva
Quality assurance of small animal irradiation: validation of a 3D-printed phantom for delivered dose evaluation
- 1215 - 1330 **Lunch posters and Industrial exhibition**

1330 - 1445	<p>Nuclear medicine, radiation protection, radiation metrology, radiobiology <i>Chair : S. Presilla, Bellinzona</i></p>
1330	<p>S. Gnesin, Institut de Radiophysique, Lausanne <i>Phantom-based image quality assessment and clinical protocol optimization in SiPM PET/CT and comparison with conventional PMT-based PET/CT devices</i></p>
1345	<p>K. Shi, Inselspital, Bern <i>Deep Learning for the Detection of Lesions on ⁶⁸Ga-PSMA PET/CT Imaging</i></p>
1400	<p>M. Gondré, Institut de Radiophysique, Lausanne <i>Optimization of alanine dosimetry for doses from 10Gy to 100Gy for flash-beam radiotherapy</i></p>
1415	<p>P. Montay-Gruel, CHUV, Lausanne <i>FLASH Radiotherapy: Spare the normal tissue but not the tumor by oxygen-dependent mechanisms</i></p>
1430	<p>L. Bellesi, Ospedale Regionale, Bellinzona <i>How and why is the medical physicist unit of radioprotection useful in a radiology department ? A quantitative analysis</i></p>
1445 - 1515	<p>Coffee, posters, exhibition (Sponsored by Elekta)</p>
1515 - 1630	<p>Radiological physics I <i>Chair : E. Samara, Sion</i></p>
1515	<p>A. Viry, Institut de Radiophysique, Lausanne <i>Diagnosis of crystal-related arthropathies with a multi-energy spectral photon counting CT</i></p>
1530	<p>T. Lima, Kantonsspital, Aarau <i>Clinical impact of CT protocol optimisation in adaptive radiotherapy</i></p>
1545	<p>D. Racine, Institut de Radiophysique, Lausanne <i>Optimization of abdominal CT protocols using a model observer: a multi-centric quantitative analysis</i></p>
1600	<p>C. Aberle, Universitätsspital, Basel <i>Update of the Diagnostic Reference Levels for CT in Switzerland with Dose Management Software</i></p>
1615	<p>T. Lima, Kantonsspital, Aarau <i>Swiss National CT Dose Registry</i></p>
1630 - 1800	<p>Annual general assembly SSRMP</p>
1900	<p>Dinner at Chalet Suisse (with the kind support of Elekta, Varian, Solumedics and RaySearch)</p>

0830 - 1015

Radiological Physics II*Chair : D. Racine, Lausanne*

0830

T. Roggen, Varian Medical Systems, Daettwil
Machine Learning based Feature Detection on 2D X-Ray Images

0845

E. Samara, Hôpital du Valais, Sion
Why is it important to connect all X-ray units to a dose management system?

0900

M. Sans Merce, Hôpital Universitaire, Genève
Dosimetric evaluation of the O-arm imaging system

0915

N. Ryckx, Institut de Radiophysique, Lausanne
Assessment of the efficiency in eye and brain dose reduction of a leaded facemask in clinical conditions using an anthropomorphic phantom and TLD

0930

Invited speaker : M. Reyes, Bern
Deep learning in medical physics : Where are we ? Challenges and opportunities

1015 - 1100

Coffee, exhibition (Sponsored by RaySearch)

1100 - 1300

Radiotherapy II*Chair : M. Fix, Bern*

1100

Invited speaker : B. Heijmen, Erasmus MC, Rotterdam
Automation in radiation therapy planning : the existing and the future

1145

M. Bogowitz , Universitätsspital, Zürich
CT lymph node radiomics improves prediction of locoregional control in head and neck cancer

1200

D. Vuong, Universitätsspital, Zürich
Do we need standardized imaging protocols or robust radiomic features for the development of image-biomarker based prognostic models?

1215

L. Halter , Inselspital, Bern
Modeling the radiation transport in a prototype MRI-Linac system using the Monte Carlo technique

1230

E. Colwill, Paul Scherrer Institute, Villigen
Anthropomorphic phantom with lung and liver compartments for MR guided radiation therapy

1245

S. Mueller, Inselspital, Bern
Deliverability-verification of treatment plans for dynamic mixed beam radiotherapy (DYMBER)

1300 - 1415 **Lunch, coffee, posters, exhibitions (Sponsored by Varian)**

1415 - 1600 **Radiotherapy III**
Chair : F. Belosi, Villigen

1415 S. Thengumpallil, Clinique des Grangettes, Genève
Towards personalized radiotherapy imaging dose report: a phantom-based evaluation of dose exposure

1430 M. Jaccard, Hôpital Universitaire, Genève
Electromagnetic transponders for real-time tracking in lung stereotactic radiotherapy: first clinical experience

1445 F. Emert, Paul Scherrer Institute, Villigen
How risky is 4D planning? – A FMEA based human error comparison of planning risks in 3D/4D proton therapy QA performed at CPT/PSI

1500 P. Logaritsch, Kantonsspital, Luzern
A quantitative evaluation of (deformable) image registration accuracy following AAPM TG 132

1515 S. Ehrbar, Universitätsspital, Zürich
ELPHA: Dynamically deformable liver phantom

1530 R. Kueng, Inselspital, Bern
Implementation of an efficient in-house tool for patient-specific quality assurance in HDR brachytherapy

1545 F. Amstutz, Universitätsspital, Zürich
Impact of tumor motion on robustness of radiomic features - comparison of PET and CT

1600 - 1615 **Closing of the meeting**
 P. Manser, SSRMP president, Bern



 HyperArc™

Unleash your ability to deliver high-precision SRS treatments

HyperArc™ high-definition radiotherapy technology is designed to simplify even the most complex non-coplanar SRS treatments. Experience leading-edge features that allow you to treat multiple metastases simultaneously, enhancing your ability to treat more patients, reduce treatment times, increase throughput and maximize efficiency.

Learn more at: Varian.com/HyperArc

Safety information: Radiation may cause side effects and may not be appropriate for all cancers.

© 2018 Varian Medical Systems, Inc. Varian and Varian Medical Systems are registered trademarks, and HyperArc is a trademark of Varian Medical Systems, Inc.

varian

Abstracts – Posters presentations

- P01** **Contraindication for radiative deep regional hyperthermia for patients with large carbon implants**
Marder D. (1), Poel R. (2), Gisep A. (3), Van Stam G. (1), Timm O. (1), Puric E. (1), Datta N.R. (1), Lutters G. (1)
(1) Kantonsspital Aarau, Radio-Onkologie-Zentrum KSA-KSB, Aarau, Switzerland
(2) Paul Scherrer Institute, Villigen, Switzerland
(3) icotec AG, Altstätten, Switzerland
- P02** **GLAaS absolute dose calibration algorithm with Elekta iViewGT Electronic Portal Imaging Device (EPID): multi-institute first experiences**
Eugenio Vanetti (1), Marco Esposito (2), Juan Maria Perez (3), Stefano Ren Kaiser (4), Giorgia Nicolini(1)
(1) Radiqa Developments, Medical Physics Team, Bellinzona, Switzerland
(2) SC Fisica Sanitaria, Usl Toscana centro, Firenze, Italy
(3) Servicio de Radiofísica, Hospital Universitario HM Puerta del Sur, Móstoles (Madrid), Spain
(4) Servizio di Fisica Sanitaria, Fondazione Poliambulanza Istituto Ospedaliero, Brescia, Italy
- P03** **Treating breast cancer with VMAT in deep inspiration breath hold: the Geneva experience**
A. Dubouloz (1), P. Nouet (1), N. Koutsouvelis (1), G. Dipasquale (1), M. Jaccard (1), O. Fargier-Bochaton (1), M. Rouzaud (1)
(1) Radiation Oncology/Geneva University Hospitals, Geneva/Switzerland
- P04** **Shortening delivery times for PBS proton therapy by reducing the number of proton spots without compromising dosimetric plan quality**
María F. Belosi, MSc¹; Steven van de Water, PhD¹, Francesca Albertini, PhD¹; Damien C. Weber, MD¹; and Antony J. Lomax, PhD¹
¹ Center for Proton Therapy, Paul Scherrer Institute, 5232 Villigen PSI, Switzerland
- P05** **Evaluation of the pre and post-treatment positioning accuracy of patients treated in Gantry 2**
L.Mikroutsikos, L.Marc, F.Albertini, D.C. Weber, T.Lomax, A.Bolsi,
Paul Scherrer Institute
- P06** **Statistical assessment of intrafractional interruptions during DIBH left-breast treatments**
Lia Vugts, Sofia Celi, Nicoletta Lomax, Kirsten Steinauer, Gerd Lutters
Radio-Onkologie Zentrum KSA-KSB
- P07** **Supine or prone-crawl photon and proton RT plans for breast and regional lymph node including the IM chain**
Francesca Belosi^{2, §}, Bruno Speleers^{1, §}, Werner De Gerssem¹, Pieter Deseyne³, Leen Paelinck³, Alessandra Bolsi², Anthony Lomax², Bert Boute⁵, Annick Van Greveling³, Christel Monten^{1,3}, Joris Van de Velde⁴, Tom Vercautere^{1,3}, Liv Veldeman^{1,3}, Damien Charles Weber^{2,6} and Wilfried De Neve^{1,3, §}
§contributed equally
¹Department of Radiotherapy and Experimental Cancer Research, Faculty of Medicine and Health Sciences, Ghent University, Belgium
²Paul Scherrer Institut, Villigen, Switzerland
³Department of Radiation Oncology, University Hospital Ghent, Belgium
⁴Department of Anatomy, Faculty of Medicine and Health Sciences, Ghent University, Belgium
⁵Industrial Design Center, Faculty of Engineering and Architecture, Ghent University, Belgium
⁶Radiation Oncology, University Hospital of Bern, Inselspital, Bern
- P08** **Portal Dosimetry with the 43 cm x 43 cm MV Imager: Improving Large-Field Performance by Diagonal Profile Adjustments**
Thomas Buchsbaum (1), Federico Hasenbalg (1)
(1) Stadtsptal Triemli Zürich, Radio-Onkologie, CH-8063 Zürich, Birmensdorferstrasse 497
- P09** **Dosimetric Impact of Titanium and Carbon Implants in Photon Therapy**
N. Klippel (1), D. Terribilini (1), A. Gisep (2), A. Joosten (1), H. Hemmatzad (1), K. Zaugg (3), D.M. Aebbersold (1), P. Manser (1)
(1) Division of Medical Radiation Physics and Department of Radiation Oncology, Inselspital, Bern University Hospital, Switzerland
(2) icotec AG, Altstätten, Switzerland
(3) Klinik für Radio-Onkologie, Stadtsptal Triemli, Zürich, Switzerland

- P10 Hybrid Intensity Modulated Treatment based on Gradient Fluence Maps: Application to loco regional breast cancer**
R. Boucenna, N. Pitteloud, M. Betz
Clinique Bois-Cerf Hirslanden Lausanne
- P11 EPR-Imaging of magnetic field induced dose effects at air cavities**
Sebastian Höfel (1,2), Michael K. Fix (3), Felix Zwicker (2), Malte Drescher (1)
(1) Department of Chemistry, University of Konstanz, Germany
(2) Klinik für Strahlentherapie/Radiologische Gemeinschaftspraxis, Gesundheitsverbund Landkreis Konstanz, Konstanz, Germany
(3) Division of Medical Radiation Physics and Department of Radiation Oncology, Inselspital, Bern University Hospital and University of Bern, Switzerland
- P12 Suitability of DDC for CT protocol optimisation with abdominal and head phantom**
Christian Sommer (1), Ismail Oezden (2), Thiago Lima (2), Mathias S. Weyland (1), Gerd Lutters (2), Stephan Scheidegger (1,2)
(1) ZHAW School of Engineering, Winterthur, Switzerland
(2) Kantonsspital Aarau, Switzerland
- P13 Multi-dimensional analysis of OSMS data during DIBH treatments**
H. Schneider, N. Lomax, G. Lutters
(1) Radio-Onkologie-Zentrum KSA-KSB
- P14 VMAT applied to synchronous bilateral breast cancer radiotherapy: dosimetric study on DIBH versus FB set up**
D. Gaudino¹, S. Cima², M. Frapolli², D. Daniele², B. Muoio², G.A. Pesce², F. Martucci², N.C. Azinwi², D. Bosetti², L. Bellesi¹, M. Casiraghi¹, M.A. Piliero¹, F. Pupillo¹, A. Richetti², M.C. Valli², S. Presilla¹.
(1) Ente Ospedaliero Cantonale, Medical Physics Unit, Bellinzona, Switzerland.
(2) Oncology Institute of Southern Switzerland, Radiation Oncology, Bellinzona-Lugano, Switzerland
- P15 Brain sparing through iterative single isocentre planning for multiple brain metastases**
Nicoletta Lomax, Sara Alonso, Mauricio Leick, Susanne Rogers, Gerd Lutters
Radio-Onkologie-Zentrum KSA-KSB, Kantonsspital Aarau