ICTR-PHE 2014

International Conference on Translational Research in Radiation Oncology | Physics for Health in Europe

International Conference Centre (CICG)
10 - 14 February, 2014

Welcome word from the co-chairs

Dear Colleague,

On behalf of the Organizing Committee, it is our pleasure to welcome you to the 2014 edition of ICTR-PHE, the International Conference on Translational Research in Radio-Oncology and Physics for Health in Europe.
Over the next five days, the most recent advances in translational research in physics, biology, nuclear medicine and clinical oncology will be reviewed. We believe that the Scientific Committee has put together a rich and varied programme of talks, and a pertinent selection of posters: we hope that you will find them interesting and stimulating.
It is also our privilege to host a public lecture by Ugo Amaldi on Tuesday evening: we warmly invite you to attend it, and to join us for a cocktail afterwards to celebrate Ugo's eminent career.
As in the past, ICTR-PHE will help you to expand your partnerships with industry, in particular through the technical exhibition. We would like to thank all our sponsors and exhibitors for their support.
Last but not least, we look forward to seeing you outside the conference venue, at the Gala Dinner and at the CERN visit!
We hope that you will enjoy the scientific and social programmes, and that you will find plenty of opportunities to exchange knowledge, to network, and to plant seeds for future collaborations.

Monday 10 February	Tuesday 11 February	Wednesday 12 February	
Room 2	Room 2	Room 2	
	8:30 Nuclear Medicine	8:30 ESTRO Lecture	
	10:30 Detectors and imaging	9:00 Pleanary Session	
11:00 Registration opens			
12:00 Lunch	**12:30 Lunch**	**12:00 Lunch and sponsored talk**	
13:00 Welcome adress	13:30 Detectors and imaging	Room 2	Room 3
13:30 The Higgs boson and our life		13:00 Symposium: New Insignts into molecular mechanisms of radio-curability	13:00 Symposium: Optimizing treatment planning and delivery
14:00 Radiobiology	14:15 New technologies	14:45 Symposium: Hadrons	14:45 Proffered papers: Physics I (Imaging)
17:15 Nuclear Medicine		16:30 Proffered papers: Physics II (Hadrons)	16:30w Proffered papers: Biology I
	18:30 Public Talk and cocktail	**19:00 Gala Dinner**	

Thursday 13 February

Room 2
8:15 G.H. Fletcher Lecture

Room 2	Room 3
8:50 Symposium: From new therapeutic targets to personalized treatment	8:50 Symposium: Hypoxic modification of radiotherapy

Room 2	Room 3	Room 4
10:30 Symposium: EORTC	10:30 Proffered papers: Biology II	10:30 Proffered papers: Physics III
11:50 Proffered papers: Radiotherapy I	11:50 Proffered papers: Biology III	11:50 Proffered papers: Physics IV (Hadrons)

12:30 Lunch

Room 2
13:30 ESO Session - E. vam der Schueren Award
14:00 Symposium in honour of Prof. Kian K. Ang: Translational research: the example of head and neck cancer

Room 2	Room 3	Room 4
15:45 Proffered papers: Radiotherapy II	15:45 Proffered papers: Biology IV	15:45 Proffered papers: Physics V (Detectors)

CERN Visit

Friday 14 February

Room 2	Room 3
8:30 Symposium: Radiosensitivity modulation: new angles of attack	8:30 Panel discussion: Clinical trials in particle therapy

Room 2	Room 3	Room 4
10:15 Proffered papers: Biology V	10:15 Porffered papers: Biology VI	10:15 Proffered papers: Physics VI (Hadrons)

11:45 Lunch

12:45 Symposium: Imaging	12:45 Symposium: Tumor vascularization	12:45 Symposium: Hadrons

Room 2	Room 3
14:00 Symposium: Modulation of tumor and normal tissue response to radiation	14:00 Symposium: Biomarker driven individualization of radiotherapy - from preclinical validation to clinical trials?

Room 2
15:20 Concluding remarks

Scientific committee

Conference Chairs
Jacques Bernier
Manjit Dosanjh

Advisory Board
Ugo Amaldi
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Soeren M. Bentzen
Jacques Bernier
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Wolfgang Enghardt
Zvi Fuks
Yoshiya Furusawa
Thomas Haberer
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Alejandro Mazal
Steve Myers
Dag Rune Olsen
Jens Overgaard
Kevin Prise
Osman Ratib
Sandro Rossi
Vincenzo Valentini
Marcel Verheij
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Session Organisers

Biologie
M. Durante, Darmstadt
K. Prise, Belfast
Ph. Lambin, Maastricht
B. Wouters, Toronto

Nuclear medicine
O. Ratib, Geneva
U. Köster, Grenoble
T. Beyer, Vienna
J-F. Chatal, Nantes

Radiotherapy
S.M. Bentzen, Madison
J. Bourhis, Lausanne
D.R. Olsen, Oslo
D. Brizel, Durham

New technologies
W. Enghardt, Dresden
A. Lomax, PSI, Villigen
A. Mazal, Curie Institute
S. Rossi, Pavia

Pre-clinical and clinical strategies
K.K. Ang, Houston
M. Baumann, Dresden
Z. Fuks, New York
M. Verheij, Amsterdam

Detectors and imaging
D. Dauvergne, Lyon
A. Del Guerra, Pisa
T. Haberer, Heidelberg
P. Lecoq, CERN

Executive committee

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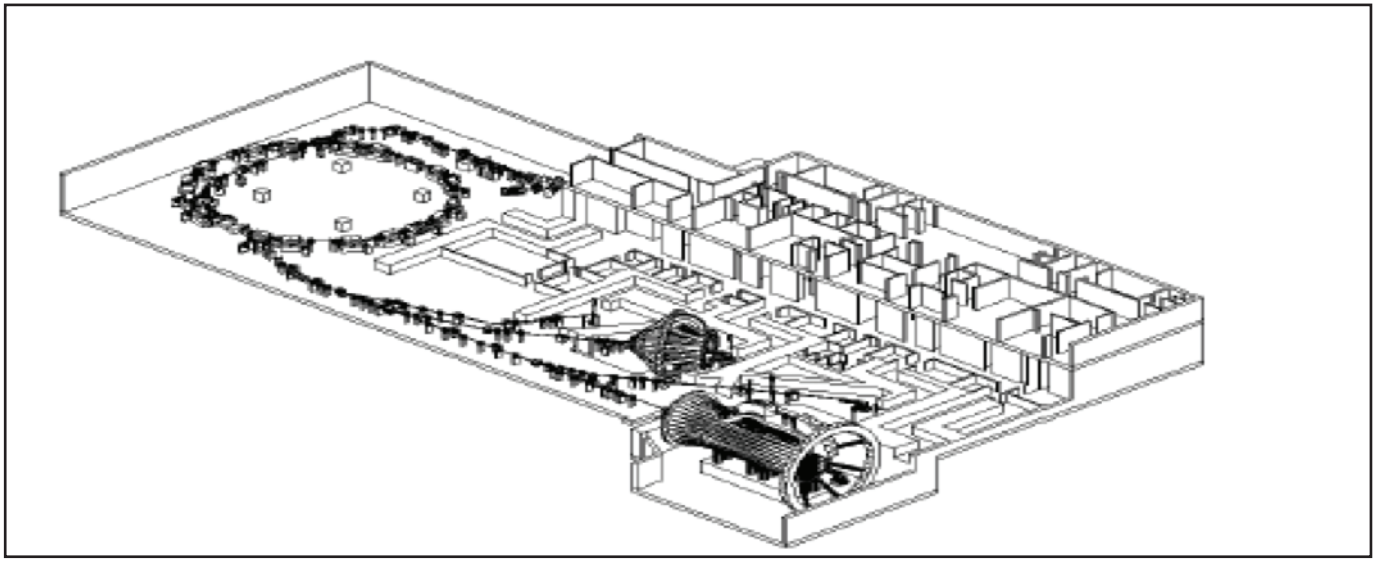
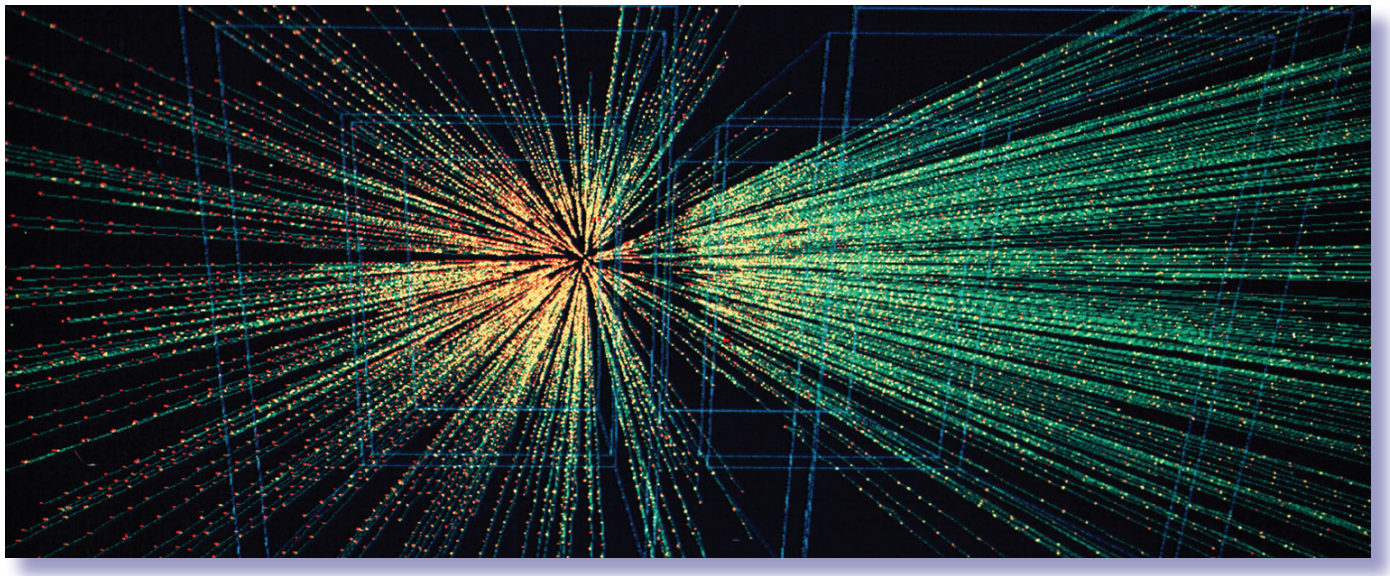
Under the auspices of

EORTC
The future of cancer therapy

Public talk : Physics is beautiful and useful - Ugo Amaldi (TERA)

The year 2014 marks the 60th anniversary of CERN, the largest particle physics laboratory in the world, and of the first cancer treatment with protons done at Berkeley. This is no coincidence: indeed, the beauty of particle physics has always been going hand in hand with useful applications. These “useful” activities follow from the technical developments in particle accelerators and radiation detectors that have brought to the discoveries of neutral currents (1973), of its mediator, the Z boson (1984) and of the Higgs condensate (2012).
The beginning of 2014 is thus the proper time to first describe these “beautiful” physics results, together with their consequences in our description of the events that took place in the first millionth of a second of the Universe life. The second part of the lecture will review CERN contributions to both diagnostics and therapy and conclude with an overview of possible future developments.





Date: Tuesday 11 February 2014
Time: 18:30
Venue: CICG

The public talk will be in English with simultaneous translation into French.

Ugo Amaldi

Ugo Amaldi has been working at CERN since the 70's as Senior Scientist. For twenty years, he has been studying, both experimentally and theoretically, the properties of protons and neutrinos and the unification of fundamental forces. He founded and directed for 13 years the DELPHI Collaboration, at CERN's LEP Accelerator. Between 1990 and 2006 he was Professor of Physics in Milan.

His scientific activity in the physics of atoms, nuclei, fundamental particles, and accelerators is acknowledged by more than 450 publications. Over the past 25 years, more than 40% of all Italian high school students have studied physics on his textbooks.

In 1992, Ugo Amaldi established TERA, the Italian Foundation for Hadrontherapy. He led the design effort of the Italian National Centre of Oncological Hadrontherapy (CNAO), which has been treating patients with protons and carbon ions since 2011. At present, he is working on the development of novel accelerator systems for tumour treatment.

Ugo Amaldi is Doctor honoris causa of the Universities of Lyon, Helsinki, Uppsala, Valencia, as well as Distinguished Affiliated Professor at Technische Universität München. Among many other acknowledgements and honours, he was awarded the Gold Medal for science and culture by the Italian President of the Republic, and was appointed Fellow of the European Physics Society.

Uniting physics, biology and medicine for better healthcare

Award Recipients

E. van der Schueren Award

Award funded by the European School of Oncology, Milano
ICTR-PHE 2014 Recipient: Netherlands Cancer Institute, Amsterdam; represented by M. Verheij

Previous E. van der Schueren Recipients:

- ICTR-PHE 2012: M.D. Anderson Cancer Center, Houston
- ICTR 2009: Memorial Sloan Kettering Cancer Center, New-York
- ICTR 2006: Institut Gustave Roussy, Villejuif
- ICTR 2003: Gray Laboratory, Northwood
- ICTR 2000: Department of Experimental Clinical Oncology, University of Aarhus

ESTRO Lecture

Lecture funded by the European Society for Therapeutic Radiology and Oncology

ICTR-PHE 2014 Recipient: M. Baumann, Dresden

Previous ESTRO Lecturers:

- ICTR-PHE 2012: P. Lambin, Maastricht
- ICTR 2009: A. van der Kogel, Nijmegen
- ICTR 2006: S.M. Bentzen, Madison

G. H. Fletcher Lecture

Lecture funded by the M.D. Anderson Cancer Center, Houston

ICTR-PHE 2014 Recipient: R. Weichselbaum, Chicago

Previous G.H. Fletcher Lecturers:

- ICTR-PHE 2012: M. Baumann, Dresden
- ICTR 2009: A. Lee, Hong Kong
- ICTR 2006: L. Milas, Houston
- ICTR 2000: H. Bartelink, Amsterdam

Uniting physics, biology and medicine for better healthcare

Monday 10 February

Room 2

12:00 – 13:00 Lunch

13:00 Welcome address

13:30 The Higgs boson and our life - Fabiola Gianotti (CERN) **Chairs: Jacques Bernier, Rolf-Dieter Heuer**

Radiobiology - Marco Durante, Kevin Prise

• 14:00 Ion Beam Radiobiology: From the Lab to the Clinic - **Eleanor Blakely (US)**

• 14h30 International Cancer Expert Corps (ICEC) - **Norman Coleman (US)**

• 15:00 Circulating biomarkers for determining absorbed ionizing radiation dose & risk for radiation induced toxicity in humans - Frederic Zenhausern (US)

• 15:15 New challenges for biologically adapted ion beam treatment planning: single and multi-ion approaches - Emanuele Scifoni (DE)

• 15:30 RBE and DNA damage variation along monoenergetic and modulated Bragg peaks of a 62 MeV therapeutic protons beam - Kevin Prise (UK)

• 15:45 Influences of aberrant mitochondrial DNA in cancer and cancer therapy - Marike van Gisbergen (NL)

16:00 – 16:30 Coffee

Radiobiology - Marco Durante, Kevin Prise

• 16:30 Hpv Status and Effect on Radiosensitivity in Head and Neck Cancer Tumor Xenografts - Brita Singers Sørensen (DK)

• 16:45 Rectal cancer and fractionation sensitivity in the neo-adjuvant radiation therapy setting: a project of meta-analysis and radiobiological modeling from individual patient data in randomized and observational data-sets - Raymond Miralbell (CH)

• 17:00 A Biomedical Research Facility at CERN based on the Low Energy Ion Ring - Adriano Garonna (CERN)

Nuclear Medicine - Ulli Köster, Jean-François Chatal

• 17:15 Radiochemical aspects of radionuclide therapies - **Helmut Maecke (DE)**

• 17:45 ^{212}Pb-labeled mAbs targeting CEA or HER2 during α-RIT of small peritoneal carcinomatosis – Dose effect relationship? - Jean-Pierre Pouget (FR)

• 18:00 152/161Tb-DOTA-RM6 biodistribution studies in prostate cancer bearing SCID mice and 149Tb sources from CERN-MEDICIS - Thierry Stora (CERN) / Franz Buchegger (CH)

• 18:15 A radionuclide generator of Erbium-165, an isotope for Auger Therapy - Gregory Severin (DK)

Tuesday 11 February

Room 2

Nuclear Medicine -
Ulli Köster, Thomas Beyer

• 8:30 Clinical experience with radionuclide therapies - **Irene Virgolini (AT)**

• 9:00 From bench to bedside: development and early clinical results of 188Re-SSS/Lipiodol for HCC treatment - Nicolas Lepareur (FR)

• 9:15 PIP: a compact recirculating accelerator for the production of medical isotopes - Adina Toader (UK)

• 9:30 Gamma Probe Based on Scintillation Crystal and Silicon Photomultiplier - Anastasia Yagnyukova (RU)

• 9:45 Preclinical studies and radiopharmaceutical developments with 64Cu produced by ARRONAX facility - Mickael Bourgeois (FR)

10:00-10:30 Coffee

Detectors & Imaging -
Denis Dauvergne, Alberto Del Guerra

• 10:30 From CERN to PET/MR - **David Townsend (SG)**

• 11:00 Software challenges and opportunities for multidisciplinary PET/CT and PET/MR imaging - **Dimitris Visvikis (FR)**

• 11:30 Prompt gamma imaging of proton pencil beams at clinical beam current - Julien Smeets (BE)

• 11:45 Prediction of β+-activity distributions from PT-PET by means of a yield approach - Stephan Helmbrecht (DE)

• 12:00 ProXY – High performance monolithic pixel tracker for proton tomography - Piero Giubilato (IT)

• 12:15 The recent developments of the FLUKA Monte Carlo code oriented to its applications in Hadrontherapy - Paola Sala (IT)

12:30-13:30 Lunch

Detectors & Imaging -
Denis Dauvergne, Alberto Del Guerra

• 13:30 Different detector concepts for several imaging scenarios: from hadrontherapy monitoring to clinical imaging - Paola Solevi (ES)

Tuesday 11 February

Room 2

• 13:45 An integrated monitoring system for the on-line assessment of particle therapy treatment accuracy - Vincenzo Patera (IT)

• 14:00 Development of Advanced Quality Assurance Instrumentation for Hadrontherapy - David Watts (TERA)

New Technologies -
Wolfgang Enghardt, Antony Lomax

• 14:15 Novel detectors for range assessment in particle therapy - **Peter Thirolf (DE)**

• 14:45 The ELIMED (Multidisciplinary and Medical applications at the ELI-Beams) network perspectives for laser driven beam applications - Pablo Cirrone (IT)

• 15:00 Harnessing laser-plasma accelerated ion beams for applications using Gabor lenses - Christopher Hughes (UK)

• 15:15 Positron emission tomography (PET) isotope production from laser-driven proton - Kai Ding (US)

• 15:30 A novel TOF-PET detector based on organic scintillators - Pawel Moskal (PL)

15:45-16:15 Coffee

New Technologies -
Wolfgang Enghardt, Antony Lomax

• 16:15 Requirements from Oncology to Imaging Technologies - **Heinz-Peter Schlemmer (DE)**

• 16:45 Potential of Detection of fast Cherenkov Photons for Improved Time of Flight Positron Emission Tomography - Stefan Brunner (AT)

• 17:00 Experimental characterization of acoustic detection and imaging for Bragg peak localization in proton therapy - Katia Parodi (DE)

• 17:15 A new elastic image fusion model for lung deformation simulation in 4D dose calculations - Stefan Milz (DE)

18:30 Public talk followed by cocktail

Wednesday 12 February

Room 2

ESTRO lecture - Jean Bourhis

• 8:30 Individualized Radiation Oncology – harnessing clinics, biology and high technology - **Michael Baumann (DE)**

Plenary session - Ugo Amaldi, Jacques Bernier

• 9:00 Health implications and applications in space - **Christer Fuglesang (SE)**

• 9:30 The convergence of science - the way to develop novel radiation oncology technologies for the future - **Dag Rune Olsen (NO)**

10:00 - 10:30 Coffee

Plenary session - Ugo Amaldi, Jacques Bernier

• 10:30 Current status of Carbon Ion Radiotherapy at NIRS - **Hirihiko Tsujii (JP)**

• 11:00 Radioisotopes - the “fuel” for nuclear medicine - **Ulli Köster (FR)**

• 11:30 Medical applications at CERN - **Steve Myers (CH)**

12:00 - 13:00 Lunch

Lunch time seminar is sponsored by IBA :
Status and perspectives of protontherapy with Pencil Beam Scanning -
Marco Schwarz (IT)

Wednesday 12 February

Room 2

Symposium: New Insignts into molecular mechanisms of radio-curability - Bradly Wouters

• 13:00 New insights into the complexities of NHEJ and HR repair - **Simon N Powell (US)**

• 13:25 Homologous recombination deficiency and radio-curability in mouse models for BRCA1/2-deficient breast cancer - **Sven Rottenberg (NL)**

• 13:50 Mechanism of HR dysfunction in single dose radiotherapy - **Zvi Fuks (US)**

Room 3

Symposium: Optimizing treatment planning and delivery - Radhe Mohan

• 13:00 New insights in IGRT for prostate cancer - **Marcel Van Herk (NL)**

• 13:25 Adaptive radiotherapy - **Vincent Gregoire (BE)**

• 13:50 New health technologies and evidence-based medicine - **Søren M Bentzen (US)**

14:15 - 14:45 Coffee

Symposium: Hadrons - Norman Coleman, Manjit Dosanjh

• 14:45 Carbon Ion Therapy: Actual and Future Strategies at HIT - **Jürgen Debus (DE)**

• 15:10 Present status of CNAO - **Roberto Orecchia (IT)**

• 15:35 Proton Radiation Therapy: Current Status of Clinical Trials - **Thomas Deaney (US)**

• 16:00 France HADRON: national infrastructure for hadrontherapy research including ETOILE, ARCHADE and protontherapy centers - **Jacques Balosso (FR)**

Proffered papers: Physics I (Imaging) - Thomas Beyer, David Townsend

• 14:45 The development of a low energy facility for clinical trials of Boron Neutron Capture Therapy - Rob Edgecock (UK)

• 14:55 Interstitial Detectors for Synchronized Radiation Quality - Giulio Magrin (AT)

• 15:05 An innovative on-line beam-monitoring detector based on the emission of secondary electrons - Saverio Braccini (CH)

• 15:15 Radiotherapy Dose Monitoring to Low-Dose Morphologic Imaging with Scanned Megavoltage X-rays - Paulo Crespo (PT)

• 15:25 Data models for the Compton camera acquisition and their influence on the reconstructed images - Voichita Maxim (FR)

• 15:35 Detection of ionizing radiation by intrinsic optical fiber sensors: preliminary results - Laura Cella (IT)

• 15:45 First investigations of Ultra-Thin 3D silicon detectors as microdosimeters - Celeste Fleta (ES)

• 15:55 Frequency difference electrical impedance tomography for imaging lung tumour - Chuan Li Yang (UK)

• 16:05 A novel dual-modality optical tomography and x-ray system for small animal radiation research platform - Ken Kang Hsin Wang (US)

• 16:15 Digital Image Processing Techniques for Application in a Microbeam End-Station Microscopy - Antonios Georgantzoglou (UK)

Wednesday 12 February

Room 2

Proffered papers: Physics II (Hadrons) - Ulli Köster, Katia Parodi

• 16:30 Initial Qualification of the Irradiation Uncertainties in Ion Beam Therapy of Prostate Cancer - Antoni Rucinski (DE)

• 16:40 Can particle beam therapy be improved using helium ions? - A treatment planning study focusing on pediatric patients - Barbara Knaeusl (AT)

• 16:50 MCTP: a new Monte Carlo-based treatment planning tool for hadrontherapy - Giusseppe Battistoni (IT)

• 17:00 PlanIt: Planning Ion therapy open platform for treatment plans testing and comparing - Faiza Bourhaleb (IT)

• 17:10 Robustness of range prediction in proton therapy using prompt gamma emission - Fiere Janssen (NL)

• 17:20 Simulation of Hadrontherapy In-beam monitoring at CNAO with the INSIDE detector - Piergiorgio Cerello (IT)

• 17:30 Evaluation of existing ripple filter designs for clinical use at the MedAustron ion beam therapy facility - Loic Grevillot (AT)

• 17:40 The (non-) detectability of failures in motion mitigated ion beam delivery by means of in-beam PET - Kristin Stützer (DE)

• 17:50 Assessment and improvements of Geant4 models in the context of prompt-gamma hadrontherapy monitoring - George Dedes (DE)

• 18:00 Monte Carlo modelling of whole-body secondary cancer risk for conventional and emergent radiotherapy - Richard Hugtenburg (UK)

Room 3

Proffered papers: Biology I - Neil Burnet, Kevin Prise

• 16:30 DCE-MRI and DCE-US quantification in CWR22 prostate tumour xenografts - Natalia Arteaga-Marrero (NO)

• 16:40 Antitumor activity of combination therapy with TH-302 and irradiation in a rat rhabdomyosarcoma model - Sarah Peeters (NL)

• 16:50 Development of a novel ELISA for detecting inducible Hsp70 in serum - Stephanie Ertl (DE)

• 17:00 Advancing the small animal radiation research platform for pre-clinical radiation research - John Wong (US)

• 17:10 Evaluation of Late Toxicity Risk for RT Patients through Geant 4 Simulation of X-Ray Dose Deposition - Frederic Brochu (UK)

• 17:20 Log file based dose calculations as a quality assurance tool in scanned beam proton radiotherapy - Gabriel Meier (CH)

• 17:30 A Novel Radioguided Surgery Technique Exploiting - decays - Riccardo Faccini (IT)

• 17:40 Investigation of irregular motion influence for future 4D In-beam PET imaging - Yuan Tian (DE)

• 17:50 Research and development of a TOF-based multi-slit collimated camera for online hadrontherapy monitoring - Marco Pinto (FR)

• 18:00 Ongoing investigations on ion-based radiography and tomography - Lorena Magallanes (DE)

19:00 Gala dinner

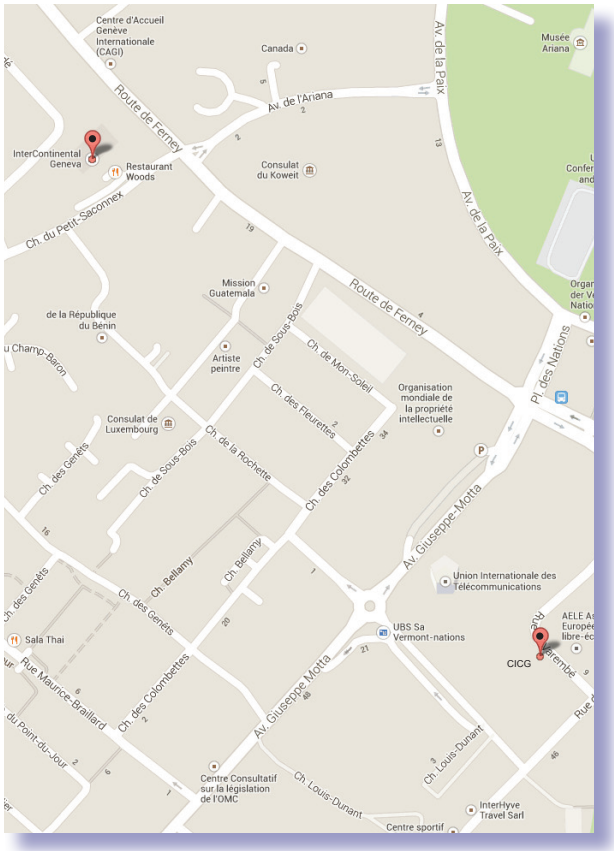
Gala dinner

Wednesday, 12 February
The conference dinner will be held at the 5* hotel Intercontinental Genève, , at walking distance from CICG.

Address: Chemin du Petit-Saconnex 7, 1209 Genève
Time: 19:00 onwards

Please don't forget to take your printed tickets with you.

Bon appétit !



Thursday 13 February

Room 2

GH Fletcher Lecture - Ritsuko Komaki

8:15 Host and Tumor Immunity: Local and Systemic Opportunities to Enhance Tumor Curability by Radiotherapy - **Ralph Weichselbaum (US)**

Room 2

Symposium: From new therapeutic targets to personalized treatment - Søren M Bentzen

• 8:50 Identification of new therapeutic targets - **Bradly G Wouters (CA)**

• 9:15 Single-dose radiotherapy: from learning curve to long-term clinical outcome - **Carlo Greco (PT)**

• 9:40 From bench to bedside: experience of the glioblastoma model for the optimization of radiosensitization - **Elizabeth C Moyal (FR)**

Room 3

Symposium: Hypoxic modification of radiotherapy - Marianne Nordsmark

• 8:50 Hypoxia-induced gene expression - **Marianne Koritzinsky (CA)**

• 9:15 Impact of tumor autophagy on solid tumors response to IR: role of the tumor stroma - **Eric Deutsch (FR)**

• 9:40 Hypoxia: where to go from here? - **Jens Overgaard (DK)**

10:05 - 10:30 Coffee Break

Room 2

Symposium: EORTC - Philippe Maingon, Sofia Rivera

• 10:30 The new business model of the EORTC - **Emad Shash (BE)**

• 10:50 The Radiation Oncology Group of the EORTC: from the past to the future - **Philippe Maingon (FR)**

• 11:10 The new drug and radiotherapy working party - **Conchita Vens (NL), Sofia Rivera (FR)**

• 11:30 An example of the integrated model: the EORTC DAHANCA-1219 trial - **Vincent Gregoire (BE)**

Room 3

Proffered papers: Biology II - Guido Baroni, Raj Jena

• 10:30 Enhanced RBE of sub-micrometer focused low-LET protons - Thomas Schmid (DE)

• 10:40 Expression of common or species specific DNA damage-repair pathway related genes in thymus of low-dose-rate irradiated AKR/J and ICR mice - Hee Sun Kim (KR)

• 10:50 [18F] HX4 PET imaging of tumour hypoxia in HNSCC patients - Karen Zegers (NL)

• 11:00 Inhibition of tumour growth using the small molecule Cathepsin L inhibitor, KGP94 - Thomas Wittenborn (DK)

• 11:10 Delayed and Persistent Response of Human Mitochondria after Single Exposure to 0.5 to 4 Gy of Gamma Radiation - Winnie Kam (CN)

Room 4

Proffered papers: Physics III - Denis Dauvergne, Ken Peach

• 10:30 Ultimate Time Resolution in Time-of-Flight PET - Paul Lecoq (CERN)

• 10:40 Ultrafast PET Detectors Based on Digital SiPMs and Their Use in In-Situ PET and Prompt Gamma Ray Imaging - Dennis Schaart (NL)

• 10:50 4D Dose calculations and 4D PET image reconstruction using deformable tetrahedral models of moving organs - Petre Manescu (FR)

• 11:00 Motion compensated reconstructions in PET-based ion beam treatment verification for moving target - Chiara Gianoli (DE)

• 11:10 Usage of long axial crystals for PET applications: the AX-PET demonstrator and beyond - Chiara Casella (CH)

Thursday 13 February

	• 11:20 Dosimetric considerations to determine the optimal technique for localized prostate cancer - Peter Kuess (AT) • 11:30 Auger electron emitters labeled to monoclonal antibodies trigger cell membrane-mediated bystander effects - Salomé Paillas (FR) • 11:40 Comparing Ion Computed Tomography under clinical constraints - David Hansen (DK)	• 11:20 Realistic on-the-fly dose calculation for low energy X-rays Intra-Operative Radiation Therapy - Marie Vidal (ES) • 11:30 A single device for mechanical and radiation Quality Assurance measurements of medical accelerators - Esteban Velarde (US) • 11:40 A combined electrical impedance tomography and cone beam CT for radiation therapy monitoring - Manuchehr Soleimani (UK)
Proffered papers: Radiotherapy I - Marcel Verheij • 11:50 Modelling acute urinary toxicity after radiotherapy for prostate cancer - Viviana Carillo (IT) • 12:00 Mediators associated to the inflammatory response in prostate cancer patients undergoing RT: preliminary results -Riccardo Valdagni (IT) • 12:10 Daily variation in rectal size and position during prostate radiotherapy measured from helical tomotherapy CT scans - Jessica Scaife (UK) • 12:20 Clinical experience with adaptive radiotherapy for muscle invasive bladder cancer - Anne Vestergaard (DK)	**Proffered papers: Biology III - Guido Baroni, Wolfgang Doerr** • 11:50 Oxygen ions achieve better tumour control probability in hypoxic tumours than carbon ions do - Niels Bassler (DK) • 12:00 Direct evaluation of ion beam radiobiological parameters from clinical data: an alternative approach to the RBE - Andrea Attili (IT) • 12:10 Equivalent uniform dose (EUD) based biological optimization for carbon ion therapy - Sarah Brüningk (DE) • 12:20 Variance Based Sensitivity Analysis of Biological Uncertainties in Carbon Ion Therapy - Florian Kamp (DE)	**Proffered papers: Physics IV (Hadrons) - Thomas Haberer, Sandro Rossi** • 11:50 TOF-PET scanner configurations for quality assurance in proton therapy: a patient case study - Peter Dendooven (NL) • 12:00 Implementation of a GPU Monte Carlo protons transport code for dose calculations: methods and challenges - Daniel Maneval (CA) • 12:10 Fast pencil beam dose calculation for hadron therapy on GPU - Joakim Da Silva (UK) • 12:20 Parameterization of lateral dose profiles for proton therapy application at CNAO - Martina Mori (IT)
12:30 - 13:30 Lunch		
Room 2		
ESO Session - E. vam der Schueren Award - Alberto Costa • 13:30 The ART of translation - **Marcel Verheij (NL)**		

Thursday 13 February

Symposium in honour of Prof. Kian K. Ang: Translational research: the example of head and neck cancer - Ritsuko Komaki

• 14:00 Eulogy of Professor Kian K. Ang - **James D Cox (US)**

• 14:25 Milestones of Pr Kian Ang's scientific contribution - **Jacques Bernier (CH)**

• 14:50 Molecular biology of head and neck carcinomas: old challenges, new insights - **Kevin Harrington (UK)**

15:15 - 15:45 Coffee Break

Room 2

Proffered papers: Radiotherapy II - David Brizel

• 15:45 The REQUITE project: validating predictive models and biomarkers of radiotherapy toxicity to reduce side-effects - Tiziana Rancati (IT)

• 15:55 Potentiation of radiation response by a novel EGFR/DNA targeting molecule in a triple negative breast cancer model - Beatrice Fournier (CA)

• 16:05 Studying inter- and intrafraction motion mitigation with sequential 4D CTs of lung tumor patients - Romain Brevet (DE)

• 16:15 Time resolved portal dosimetry for Volumetric Modulated Arc Therapy (VMAT) in lung cancer patients with atelectasis - Mark Podesta (NL)

• 16:25 Spot-scanning Proton Therapy for Pediatric Parameningeal Rhabdomyosarcomas: Clinical Outcome of 39 Patients Treated at PSI - Carmen Ares (CH)

Room 3

Proffered papers: Biology IV - Manjit Dosanjh, Peter Johnstone

• 15:45 Vimentin (EMT Marker Protein) Score As One of Predictors Resistance to Erlotinib and Radiotherapy for Patients with Stage III Non-Small Cell Lung Cancer on A Prospective Phase II Trial - Ritsuko Komaki (US)

• 15:55 Towards simpler and better prediction of relative biological effect (RBE) - Bleddyn Jones (UK)

• 16:05 Combined Radiochemotherapeutical Strategies for Microtubule Stabilizing Agent (MSA)-Resistant Tumors - Angela Broggini-Tenzer (CH)

• 16:15 Preclinical Assessment of Efficacy of Radiation Dose Redistribution Based on Intratumoral FDG-PET Uptake - Daniela Trani (NL)

• 16:25 Fat percentage and hand grip strength in lung cancer: the influence on survival and toxicity - Kim Smits (NL)

Room 4

Proffered papers: Physics V (Detectors) - Ulli Köster, Paul Lecoq

• 15:45 Verification of dynamictrajectory radiotherapy based on Monte Carlo - Michael Fix (CH)

• 15:55 Development of a transparent photon detector for the online monitoring of IMRT beams - Rachel Delorme (FR)

• 16:05 An Intensity Modulated Radiotherapy Beam Monitoring System using a Monolithic Active Pixel Sensor - Johannes Velthuis (UK)

• 16:15 Geant4 simulation of a dedicated beam line at the CNAO facility for the study of uveal melanomas - Edoardo Farina (IT)

• 16:25 EndoTOFPET-US: A multimodal ultrasound and time of flight PET endoscope for developing new biomarkers for the prostate and pancreatic cancers. - Etiennette Auffray (CERN)

CERN visit

CERN underground visit

Thursday, February 13

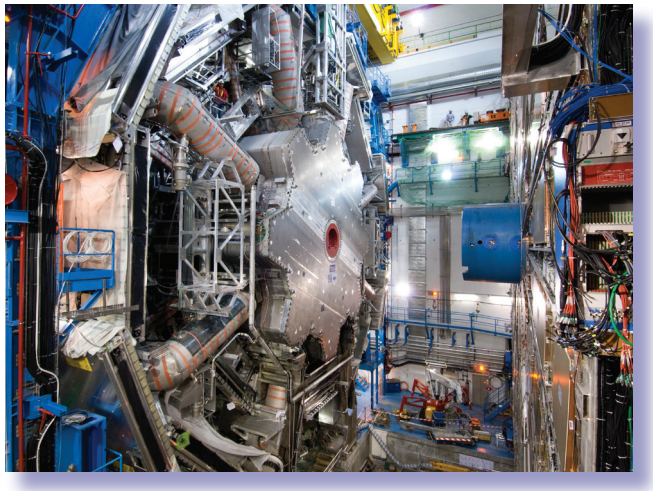
CERN, the European Organization for Nuclear Research, is the largest particle physics laboratory in the world. Founded in 1954, the CERN laboratory sits astride the Franco-Swiss border near Geneva. It was one of Europe's first joint ventures and now has 20 member states.

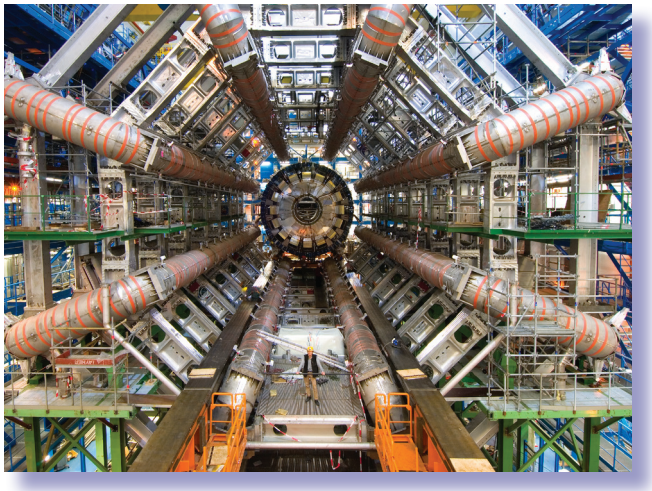
On 4 July 2012, the ATLAS and CMS experiments at CERN's Large Hadron Collider (LHC) announced they had each observed a new particle in the mass region around 126 GeV. This particle is consistent with the Higgs boson but it will take further work to determine whether or not it is the Higgs boson predicted by the Standard Model.

On 8 October 2013 the Nobel prize in physics was awarded jointly to François Englert and Peter Higgs "for the theoretical discovery of a mechanism that contributes to our understanding of the origin of mass of subatomic particles, and which recently was confirmed through the discovery of the predicted fundamental particle, by the ATLAS and CMS experiments at CERN's Large Hadron Collider."

The visit will take you a 100 m below ground, to see the ATLAS detector: at 46 m long, 25 m high and 25 m wide, the 7000-tonne ATLAS detector is the largest volume particle detector ever constructed. You will also have the opportunity to visit the permanent exhibition "Universe of Particles" in CERN's Globe of Science and Innovation.

Transportation provided from CICG to CERN: please note the bus leaves at **16:45** *sharp! Visit will end approximately at 19:30 and will be followed by a cocktail in the Globe of Science and Innovation. No transportation is provided after the visit.*





Friday 14 February

Room 2

Symposium: Radiosensitivity modulation: new angles of attack - Richard Kolesnick

• 8:30 Growth factor and integrin receptor targeting - there is more to it than just inhibition - **Nils Cordes (DE)**

• 8:55 Notch and radiotherapy: does it matter? - **Marc Vooijs (NL)**

• 9:20 Head-and-neck cancers: towards new, intriguing fractionation schedules - **Jean Bourhis (CH)**

Room 3

Panel discussion: Clinical trials in particle therapy - Vikram Bhadrasain, Manjit Dosanjh

• 8:30 **- Jürgen Debus (DE)**
- Roberto Orecchia (IT)
- James D Cox (US)
- Hirohiko Tsujii (JP)

9:45 - 10:15 Coffee Break
Sponsored by Indiana University Health Proton Therapy Center

Room 2

Proffered papers: Biology V - Vikram Bhadrasain, Frederic Zenhausern

• 10:15 Radiosensitization of Non–Small Cell Lung Cancers by Targeting Ionizing Radiation-Induced Activation of ADAM17 - Martin Pruschy (CH)

• 10:30 Do physiological relevant doses of biguanides have any role in cancer treatment? - Morten Busk (DK)

• 10:45 Adoptive T cell therapy potentiates efficacy of alpha radio-immunotherapy - Jeremie Menager (FR)

• 11:00 Oral mucosal radiation response (mouse) - relevance of ceramide-induced apoptosis? - Wolfgang Doerr (AT)

Room 3

Proffered papers: Biology VI - Norman Coleman, Kevin Prise

• 10:15 Radiobiological Considerations for Retreatment of Central Nervous System Tumours - John Hopewell (UK), Bleddyn Jones (UK)

• 10:25 Gadolinium based nanoparticles for radiosensitization of head and neck squamous cell carcinoma - Claire Rodriguez-Lafrasse (FR)

• 10:35 Noninvasive Imaging of Radiation-Induced Lung Inflammation with Positron Emission Tomography (PET) in a Murine Model - Jin Zhang (US)

• 10:45 The use of 'planned overshoot' for reducing dose to healthy tissue and improve treatments robustness for scanned proton beams - Francesca Albertini (CH)

• 10:55 Clinical testing of an in-room imaging system for patient setup verification in particle therapy - Andrea Pella (IT)

• 11:05 Reduced side effects by proton microchannel radiotherapy – study in a human skin model - Stefanie Girst (DE)

Room 4

Proffered papers: Physics VI (Hadrons) - Ugo Amaldi, Hirohiko Tsujii

• 10:15 Prompt Gamma Imaging at MGH with LaBr3 Scintillating Crystals, Joao Seco (US)

• 10:25 Nanoparticles and protontherapy: disentangling possible physical effects - Yolanda Prezado (FR)

• 10:35 Intra-fraction tumor tracking based on a surrogate-driven 4D CT motion model in particle radiation therapy - Aurora Fassi (IT), Guido Baroni (IT)

• 10:45 95 MeV/A carbon fragmentation studies for hadrontherapy: measurements and comparisons with GEANT4 simulations - Marc Labalme (FR)

• 10:55 Properties of therapeutic He, Li and O beams studied with Geant4, Lucas Burigo (DE)

• 11:05 Automatic beam dose profiler for scanned pencil beams (protons and carbon ions) at the CNAO hadrontherapy facility - Aurora Tamborini (IT)

Friday 14 February

• 11:25 Entervision Wp4. Biological Dosimetric Phantom. Proof Of Concept Preliminary Results - Thiago V.M. Lima (CERN)

• 11:35 The use of the Golden Triangle paradigm for Knowledge Exchange for Computational Radiotherapy: a Case Study - Michael Simmons (UK)

• 11:25 Proton Interaction Vertex Imaging for carbon therapy quality control - Regina Rescigno (FR)

• 11:35 Dual energy CT to reduce range uncertainties in hadrontherapy - Guillaume Landry (DE)

11:45 - 12:45 Lunch

Symposium: Imaging - Philippe Lambin

• 12:45 Hypoxia Imaging - **Marianne Nordsmark (DK)**

• 13:10 Functional image-based target definition - **Robert Jeraj (US)**

• 13:35 Predictive and prognostic role of functional imaging of head and neck squamous cell carcinomas - **David Brizel (US)**

Symposium: Tumor vascularization - Jens Overgaard

• 12:45 Hypoxia modification in experimental tumours, - **Daniel Zips (DE)**

• 13:10 The vascular supply and microenvironment of tumours and their significance for cancer therapy - **Michael Horsman (DK)**

• 13:35 Targeting hypoxia through autophagy - **Kasper Rouschop (NL)**

Symposium: Hadrons - Roberto Orecchia

• 12:45 Evolution of technology to optimize the delivery of proton therapy: the third generation - **Thomas Bortfeld (US)**

• 13:10 Robust optimization of IMPT dose distributions, - **Radhe Mohan (US)**

• 13:35 Proton clinical correlates of patient throughput and cyclotron availability - **Peter AS Johnstone (US)**

Room 2

Symposium: Modulation of tumor and normal tissue response to radiation - Simon Powell

• 14:00 Carbonic Anhydrase IX inhibitors: a new class of targeted agents - **P. Lambin (NL)**

• 14:20 Immunosensitization by radiotherapy: the example of immunocytokines - **Ludwig Dubois (NL)**

• 14:40 Novel strategies to spare normal tissues from radiation damage - **Marie-Catherine Vozenin (FR)**

• 15:00 Intestinal Stem Cells are Radiation Resistant - **Richard Kolesnick (US)**

Room 3

Symposium: Biomarker driven individualization of radiotherapy - from preclinical validation to clinical trials? - Michael Baumann

• 14:00 Biomarker for stratification in radiotherapy - preclinical and early clinical models - **Mechthild Krause (DE)**

• 14:25 Imaging for prescription function - **Daniela Thorwarth (DE)**

• 14:50 How will we develop the evidence base for biologically individualized radiotherapy? - **Tim Maughan (UK)**

Room 2

15:20 Concluding remarks - Jacques Bernier (CH), Manjit Dosanjh (CERN)

List of posters

1- Extremely high-granularity digital tracking calorimeter for the detection of charged and neutral radiation in hadron - AADNEVIK, D (NO)

2- Calibration of lanthanum bromide scintillation detectors - ABBAS, MI (EG)

3- A µTCA Data Acquisition System and its application for Hadrontherapy Monitoring using a Compton Camera - ABELLAN, C (FR)

4- New design of ytterbium sources for brachytherapy - AKULINICHEV, S (RU)

5- Verification and Application of a new method for Ion Spectroscopy in Heavy Ion Radiotherapy - ARICO, G (DE)

6- Choroidal Melanoma brachytherapy enhancement with gold nanoparticles using a full Monte Carlo modelling of human eye - ASADI, S (IR)

7- Impact of uncertainties in ion beam therapy on the optimality of irradiation condition and fractionation schedule - ATTILI, A (IT)

8- Measurement of charged particle yields emitted during irradiation with therapeutic proton and Carbon beams in view of the design of a new tool for the monitoring of hadrontherapy treatments - BATTISTONI, G (INFN)

9- PET/CT-based verification of scanned proton and carbon ion treatment at HIT – an overview - BAUER, J (DE)

10- Performance of layered and volumetric rescanning for different scanning speeds of proton beam - BERNATOWICZ, K (PSI)

11- Pre-clinical validation of a beam model designed for treatment planning computation of scanned proton and carbon ion beams - BERTRAND, D (IBE)

12- Augmented Reality tools for particle therapy facilities - BOURHALEB, F (IT)

13- Dose distribution characterization in the halo of proton pencil beams with emulsion film detectors - BRACCINI, S (CH)

14-Segmentation and Tracking of ROIs for Image-Guided Fractionated Radiotherapy - BUENO, G (ES)

15- Radiograaff: a medium energy proton irradiation platform for radiobiological studies. Presentation and first results - CONSTANZO, J (FR) & DAUVERGNE, D (FR)

16- Dose Delivery System of CNAO: a new medical device - DONETTI, M (IT) & LAVAGNO, M (IT)

17- Collaborating for the future: the ENLIGHT Network - DOSANJH, M (CERN)

18- Fast Monte Carlo simulator for the distribution of prompt-gamma emitters in protontherapy - EL KANAWATI, W (FR)

19- DNA damage, protein expression and migration of melanoma cells irradiated with proton beam - ELAS, M (PL)

20- Varian Eclipse TPS and FLUKA Monte Carlo proton dose deposition comparison - FIORINI, F (UK)

21- The XEMIS2 prototype - GALLEGO, L (FR)

22- Development of a PET scanner simulation package for FLUKA - GARCIA ORTEGA, P (CERN)

23- Iterative Reconstruction of Clinical Electron Beam Phase Space for Intra-Operative Radiation Therapy - HERRANZ, E (ES) & UDÍAS, JM (ES)

24- Compton imaging in proton therapy: reconstructed images compared to simulated prompt-γ distribution - HILAIRE, E (FR)

25- ESI's Scientific Schools: a privileged place for knowledge transfer - HOFFMANN, HF (CERN, ESI)

26- Analysis of radiobiological models in prediction of acute and late toxicity in prostate cancer patients - HOSTOVÁ, B (SVK)

27- Comparison of Scintillation Detectors based on BGO and LSO for Prompt Gamma Imaging in Particle Therapy - HUESO-GONZÁLEZ, F (ES)

28- Precision in prompt gamma-based range monitoring of proton pencil beams in heterogeneous media - JANSSENS, G (BE)

29- Medical radioisotopes from the Heavy Ion Laboratory, University of Warsaw - JASTRZĘBSKI, J (PL)

30- A Beam Control System for an Experimental Beam Line Operated Parallel to a Therapeutic Beam Line - KORMOLL, T (DE)

31- Beam monitoring and dosimetry tools for radiobiology experiments at the cyclotron ARRONAX - KOUMEIR, C (FR)

32- Real-time monitoring of the ion range during hadrontherapy: An update on the beam tagging

hodoscope - KRIMMER, J (FR)

33- The Advantages of Improved Gd DRZ Screens Compared to Gd2SO2 and CsI in Patients Exposure Dose Reduction during the Chest Radiography - KULICH, I (UA) & MELENEVSKA, N (UA)

34- Identification of DNA sequence variants associated with a gene expression profile predictive for radiation induced fibrosis - LAURSEN, LV (DK)

35- Simulation of a coupled Silicon Photomultiplier & LYSO scintillator detector system for prototype PET detector development - LEMING, EJ (UK)

36- Trigger optimization for in-beam PET dedicated to particle therapy range verification - LESTAND, L (FR)

37- Development of a Time-Of-Flight Compton Camera for Online Control of Ion Therapy - LEY, J-L (FR)

38- Multigap Resistive Plate Chambers as a Positron Emission Tomography detector - LITOV, L (BG)

39- Development of a technique to speed up the simulation of PET and SPECT - MANCINI TERRACCIANO, C (CERN)

40- Rediscovering grid therapy: new approaches - MARTÍNEZ-ROVIRA, I (FR)

41- Monitoring of carbon ion beams using secondary ions: investigations in inhomogeneous targets - MARTISIKOVA, M (DE)

42- Head motion correction in positron emission tomography using point source tracking system - NAZARPARVAR, B (IR)

43- Comparison of 4 MV and 6 MV photons for whole breast irradiations - NESTERUK, M (CH) & FIX, MK (CH)

44- First results with a new detection system for complex radiotherapy treatment verification - OVEJERO, MC (ES)

45- Nuclear translocation of FTS (Fused Toes Homolog) is required for EGFR phosphorylation and confers radiation resistance on uterine cervix cancer - PARK, W-Y (KR)

46- Cardiac toxicity induced by radiotherapy. Role of the GEF, Epac, in hypertrophy and amyloidosis but not in fibrosis - PETIT, B (CH)

47- ClearPEM-Sonic: a multimodal PET-ultrasound mammography system - PIZZICHEMI, M (IT)

48-Particle therapy in India: A feasibility study - RATH, AK (IN)

49- Quantitative study of clinical SPECT: image reconstruction and sensitivity - SAIKOUK, H (MA) & EL KHAYATI, N (MA)

50- Dosimetric comparison between Agility and MLCi heads for nasopharyngeal IMRT plans created by two different treatment planning systems - SAKUMI, A (JP)

51- Characterization of wireless personal dosimeter prototype for Interventional Radiology medical operators - SERVOLI, L (IT)

52-Nuclear techniques for studying soft matter at ISOLDE/CERN - STACHURA, M (CH)

53- Education and training in medical imaging for conventional and particle radiation therapy: the ENTERVISION training network - THE ENTERVISION TRAINING NETWORK

54- Quality assurance for hadron therapy: the ENVISION project - THE ENVISION CONSORTIUM

55- Training the next generation of experts in hadron therapy: the PARTNER training network - THE PARTNER TRAINING NETWORK

56- The ULICE project - THE ULICE CONSORTIUM

57- Large Momentum Acceptance NS-FFAG superconducting gantry for Carbon Ion Cancer Therapy for PAVIA - TRBOJEVIC, D (US)

58- Compton Telescope Prototype Based on Continuous LaBr3 Crystals and Silicon Photomultipliers - TROVATO, M (ES)

59- Moving forward in radionuclide development in Switzerland - VAN DER MEULEN, N (CH)

60- The SMAC-mimetic Debio 1143 efficiently enhanced radiotherapy in head and neck squamous cell carcinoma models - VIERTL, D (CH)

61- Radiosensitizing effect of a RasGAP derived peptide on cell survival in human cancer cells in vitro and in vivo - VIERTL, D (CH)

62- The doorway to high specific activity of 195mPt - WILMSEN, D (DE)

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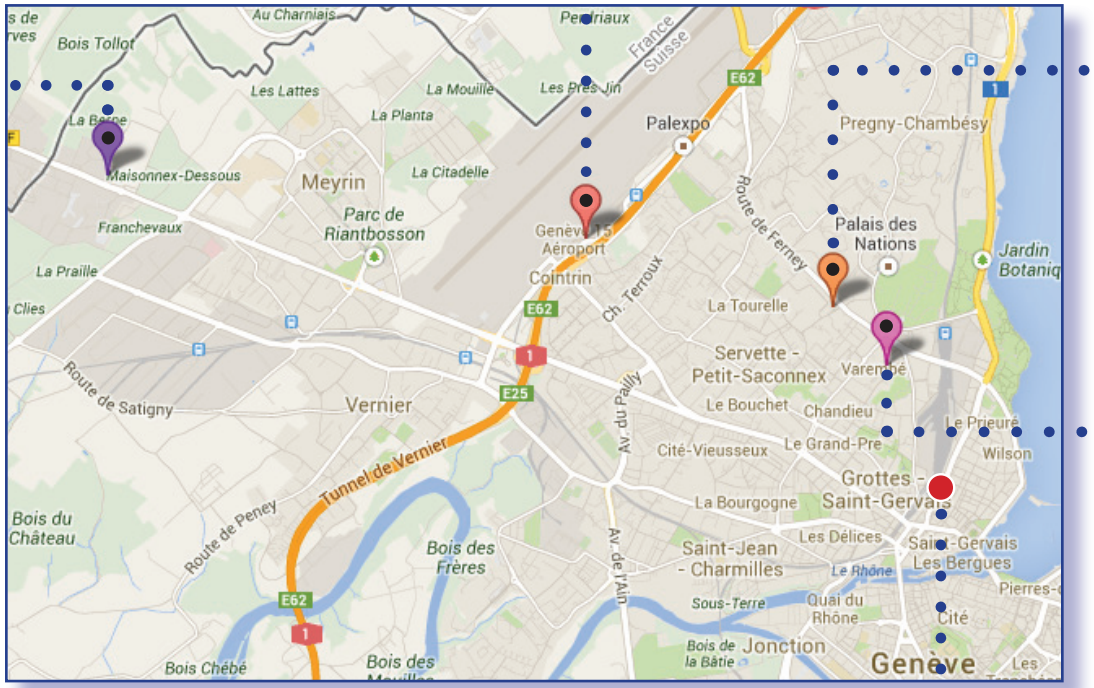

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