



Project co-funded by the European Commission within the FP7 (2007–2013)
Grant agreement no.: 241851

ENVISION European NoVel Imaging Systems for ION therapy



Project type: FP7 Cooperation: Health - Collaborative Project (CP)

Start date of project: 1st February 2010 Duration: 48 months

List of Publication

Publications on scientific journals

A small animal PET prototype based on Silicon Photomultipliers; S.Marcatili, N.Belcari, M.G.Bisogni, G.Collazuol, G.Sportelli, E.Pedreschi, F.Spinella, M.Foresta, C.Marzocca, A.Del Guerra. *Il Nuovo Cimento C*, 34C(1), in press, 2011

Prompt gamma imaging with a slit camera for real time range control in proton therapy; J.Smeets, F.Roellinghoff, D.Prieels, F.Stichelbaut, A.Benilov, P.Busca, C.Fiorini, R.Peloso, M.Basilavecchia, T.Frizzi, J.C.Dehaes, A.Dubus. Submitted to PMB

Silicon Photomultipliers(SIPM) as novel photodetectors for PET; A.Del Guerra, N.Belcari, M.G.Bisogni, F.Corsi, M.Foresta, P.Guerra, S.Marcatili, A.Santos, G.Sportelli. *Nucl. Instr. and Meth. A* 648 S232, 2011

An outlook on future design of hybrid PET/MRI systems; H.Zaidi, A.Del Guerra. *Med. Phys.*, 38(2010) 5667, 2011

Front-end multi-channel PMT-associated readout chip for hodoscope application; S. Deng, H. Mathez, D. Dauvergne, Y. Zoccaratto, GN. Lu. *Nuclear Instruments and Methods in Physics Research A*, DOI: 10.1016/j.nima.2011.11.042, 2012

Design Guidelines for a Double Scattering Compton Camera for Prompt-gamma Imaging During Ion Beam Therapy: A Monte Carlo Simulation Study; M.-H. Richard, M. Chevallier, D. Dauvergne, N. Freud, P. Henriet, F. Le Foulher, J.M. Létang, G. Montarou, C. Ray, F. Roellinghoff, E. Testa, M. Testa, A. H. Walenta. *IEEE Trans. Nucl. Sci.*, 58:1(87-94), 2012

Design of a Compton camera for 3D prompt- γ imaging during ion beam therapy; F. Roellinghoff, M.-H. Richard, M. Chevallier, J. Constanzo, D. Dauvergne, N. Freud, P. Henriet, F. Le Foulher, J.M. Létang, G. Montarou, C. Ray, E. Testa, M. Testa, A. H. Walenta. *NIMA*, 648(S20-S23), 2011

Real-time monitoring of the Bragg-peak position in ion therapy by means of single photon detection; M. Testa, M. Bajard, M. Chevallier, D. Dauvergne, N. Freud, P. Henriet, S. Karkar, F. Le Foulher, J.M. Létang, R. Plescak, C. Ray, M.-H. Richard, D. Schardt, E. Testa. *Radiation and Environmental Biophysics*, 49:3(337-343), 2010

First tests in the application of silicon photomultiplier arrays to dose monitoring in hadron therapy; G. Llosá, J. Barrio, C. Lacasta, S. Callier, L. Raux, C. L., Taille. *Nucl. Inst. Meth. Phys. Res. Sec. A*, volume 648, pages S96--S99, number 1, 2011

A Compton imager for in-vivo dosimetry of proton beams – A design study; T. Kormoll, F. Fiedler, S. Schöne. *Nucl. Instr. Meth. A* 626-627, S. 114-119, 2011

Enhanced 4D PET optimization based on 4D CT motion modelling; C. Gianoli, G. Fontana, M. Riboldi, C. Cavedon, G. Baroni. *Radiother Oncol* 99 Supplement 1, Pages S67-S68, 2011

A geodesic deformable model for automatic segmentation of image sequences applied to radio-oncology; G. Bueno, O. Déniz, J. Salido, C. Carrascosa, JM. Delgado. DOI: 10.1007/s11548-010-0513-9. International Journal of Computer Assisted Radiology and Surgery, September 2010

Three dimensional organ modeling based on deformable surfaces applied to radio-oncology; G. Bueno, O. Déniz, J. Salido, C. Carrascosa, JM. Delgado. Journal of Zhejiang University-SCIENCE C, Vol. 11(6), pp.407-417, June 2010

On the feasibility of automatic detection of range deviations from in-beam PET data; S. Helmbrecht, A. Santiago, W. Enghardt, P. Kuess, F. Fiedler. Physics in Medicine and Biology – accepted / in Press

Using statistical measures for automated comparison of in-beam PET data; P. Kuess, W. Birkfellner, W. Enghardt, S. Helmbrecht, F. Fiedler, D. Georg. Submitted to Medical Physics (currently under review)

Monte Carlo calculations of positron emitter yields in proton radiotherapy; E. Seravalli, C. Robert, J. Bauer, F. Stichelbaut, C. Kurz, J. Smeets, C. Van Ngoc Ty, D. R. Schaart, I. Buvat, K. Parodi, F. Verhaegen. Physics in Medicine Biology 57: 1659-1673, 2012

ENLIGHT and other EU-funded Projects in Hadron Therapy; Dosanjh M, Jones B, Mayer R. Br J Radiol 83, 811-813, 2010

The European Network for Light Ion Hadron Therapy; Dosanjh M, Cirilli M, Greco V, Meijer, AE. J. Health Physics, accepted, 2011

4D particle therapy PET simulation for moving targets irradiated with scanned ion beams; K. Laube, S. Menkel, C. Bert, W. Enghardt, S. Helmbrecht, N. Saito and F. Fiedler. Phys. Med. Biol. 58 (3) 513-533, 2013

Experimental verification of a 4D reconstruction algorithm used for in-beam PET measurements in particle therapy; K. Laube, C. Bert, W. Enghardt, S. Helmbrecht, K. Parodi, M. Priegnitz, N. Saito, F. Fiedler. Phys Med Biol. (submitted), 2013

Time-resolved PET imaging based on 4D CT motion modeling: the virtual 4D PET strategy; C. Gianoli, M. Riboldi, G. Fontana, M. G. Giri, D. Grigolato, M. Ferdeghini, C. Cavedon, G. Baroni. Med Phys, under second revision

On the feasibility of automatic detection of range deviations from in-beam PET data; Helmbrecht et al. Phys Med Biol 57, S. 1387–1397, 2012

Using statistical measures for automated comparison of in-beam PET data; Kuess et al. Medical Physics, 39(10) 5874-81, 2012

LET correction for EBT3 films in the presence of proton Spread Out Bragg Peaks, accepted for publication in Physics in Medicine and Biology; Fiorini et al. PhysMedBiol



Describing Compton scattering and two-quanta positron annihilation based on Compton profiles: two models suited for the Monte Carlo method; Böhlen T, Ferrari A, Patera V, Sala PR. JINST 7: P07018, 2012

FLUKA and PENELOPE simulation of 10 keV to 10 MeV photons in LYSP and soft tissue; Böhlen TT, Fassò A, Ferrari A, Ortega P, Sala PR. Rad. Phys. and Chem. (submitted), 2013

A Monte Carlo-based treatment planning tool for ion beam therapy; Böhlen TT et al. J. Radiat. Res. (submitted), 2013

Candidate therapeutic ions: a physics account of interactions in and escapes out of the body; Chin MPW, Cerutti F, Ferrari A, Mairani A, Sala PR. Trans. Am. Nucl. Soc. 105: 55, 2011

Evaluation of Monte Carlo codes for dose monitoring using PET and prompt gamma imaging in proton therapy; Robert C, Dedes G, Battistoni G, Lestand L, Gueth P, Prezado Y, Testa E, Montarou G, Sarrut D, Buvat I. J. Nucl. Med. 32: 2261, 2012

Distributions of secondary particles in proton and carbon-ion therapy: a comparison between GATE/Geant4 and FLUKA Monte Carlo codes; Robert C, Dedes G, Battistoni G, Böhlen TT, Buvat I, Cerutti F, Chin MPW, Ferrari A, Gueth P, Kurz C, Lestand L, Mairani A, Montarou G, Nicolini R, Ortega PG, Parodi K, Prezado Y, Sala PR, Sarrut D, Testa E. Phys. Med. Biol. (in revision), 2013

Monte Carlo calculations of positron emitter yields in proton radiotherapy; Seravalli E, Robert C, Bauer J, Stichelbaut F, Kurz C, Smeets J, Van Ngoc Ty C, Schaart DR, Buvat I, Parodi K, Verhaegen F. Phys. Med. Biol. 57: 1659-1673, 2012

Comparison of Monte Carlo positron-emitter yield calculations in proton radiotherapy; Seravalli E, Bauer J, Robert C, Stichelbaut F, Kurz C, Smeets J, Schaart DR, Buvat I, Parodi K, Verhaegen F. Radiother. Oncol. 103: S320, 2012

Prompt gamma imaging with a slit camera for real time range control in proton therapy; Smeets J, Roellinghoff F, Prieels D, Stichelbaut F, Benilov A, Busca P, Fiorini C, Peloso R, Basilavecchia M, Frizzi T, Dehaes J-C and Dubus A. Phys Med. Biol. 57, May 2012

Interaction vertex imaging (IVI) for carbon ion therapy monitoring: a feasibility study; P. Henriet, E. Testa, M. Chevallier, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, C. Ray, M. -H. Richard, F. Sauli. Physics in Medicine and Biology, 57(4655-4669), 2012

Fast readout of GEM detectors for medical Imaging; M. Bucciantonio, U. Amaldi, R. Keiffer, N. Malakhov, F. Sauli, D. Watts. Nucl. Instr. and Meth., in press, 2012

Front-end multi-channel PMT-associated readout chip for hodoscope application; S Deng, H Mathez, D. Dauvergne, Y Zoccaratto, GN Lu. Nuclear Instruments and Methods in Physics Research A, DOI: 10.1016/j.nima.2011.11.042, 2012

Design Guidelines for a Double Scattering Compton Camera for Prompt-gamma Imaging During Ion Beam Therapy: A Monte Carlo Simulation Study; M. -H. Richard, M. Chevallier, D. Dauvergne, N. Freud, P. Henriet, F. Le Foulher, J.M. Létang, G. Montarou, C. Ray, F. Roellinghoff, E. Testa, M. Testa, A. H. Walenta. IEEE Trans. Nucl. Sci., 58:1(87-94), 2012

Design of a Compton camera for 3D prompt- γ imaging during ion beam therapy; F. Roellinghoff, M. -H. Richard, M. Chevallier, J. Constanzo, D. Dauvergne, N. Freud, P. Henriet, F. Le Foulher, J.M. Létang, G., Montarou, C. Ray, E. Testa, M. Testa, A. H. Walenta. NIMA, 648(S20-S23), 2011

Real-time monitoring of the Bragg-peak position in ion therapy by means of single photon detection; M. Testa, M. Bajard, M. Chevallier, D. Dauvergne, N. Freud, P. Henriet, S. Karkar, F. Le Foulher, J.M. Létang, R. Plesca, C. Ray, M. -H. Richard, D. Schardt, E. Testa. Radiation and Environmental Biophysics, 49:3(337-343), 2010

First Compton telescope prototype based on continuous LaBr₃-SiPM detectors; G. Llosá, J. Cabello, S. Callier, J. J. Gillam, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, V. Stankova, M. Trovato, C. L. Taille. Nucl. Inst. Meth. Phys. Res. Sec. A (in press), 2013

Detector characterization and first coincidence tests of a Compton telescope based on LaBr₃ crystals and SiPMs; G. Llosá, J. Barrio, J. Cabello, A. Crespo, C. Lacasta, M. Rafecas, S. Callier, C. L. Taille, L. Raux. Nucl. Inst. Meth. Phys. Res. Sec. A, volume 695, pages 105--108, number 11, 2012

First tests in the application of silicon photomultiplier arrays to dose monitoring in hadron therapy; G. Llosá, J. Barrio, C. Lacasta, S. Callier, L. Raux, C. L., Taille. Nucl. Inst. Meth. Phys. Res. Sec. A, volume 648, pages S96--S99, number 1, 2011

A Compton imaging algorithm for on-line monitoring in hadron therapy; J. E. Gillam, C. Lacasta, I. Torres-Espallardo, C. C. Juan, G. Llosá, P. Solevi, J. Barrio, M. Rafecas. Medical Imaging 2011: Physics of Medical Imaging, volume 7961, pages 79611O, number 1, 2011

Hodoscope Coincidence Imaging for Hadron Therapy Using a Compton Camera; J. E. Gillam, I. Torres-Espallardo, C. Lacasta, P. Solevi, J. Barrio, G. Llosa, M. Rafecas. 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, Valencia, Spain. October 2011

Conference talks and presentations

Simulation Study of Resistive-Plate-Chambers based PET for hadron-therapy monitoring; I. Torres-Espallardo, J.E. Gillam, P. Solevi, J. Cabello, G. Llosa, J. Barrio, V. Stankova, C. Solaz, C. Lacasta, M. Rafecas; IEEE Nuclear Science Symposium Conf. Records, 2011

Data Acquisition System for the Readout of SiPM Matrix with the VATA64HDR16 Front-End ASIC; V. K. Stankova, C. Lacasta, C. Solaz, J. Barrio, G. Llosa. IEEE Nuclear Science Symposium Conf. Records, 2011

A compact multi gap RPC detector for TOF-PET; F. Sauli. Book of abstracts ICTR-PHE Conference, Geneva, Switzerland, 27th February –2nd March , 2012

A comprehensive & Systematic study of Coincidence Time Resolution and Light Yield Using Scintillators of Different Size, Wrapping and Doping; E. Auffray, F. Geraci, A. Ghezzi, S. Gundacker, H. Hillemanns, P. Jarron, T. Meyer, M. Paganoni, K. Pauwels, M. Pizzichemi, P. Lecoq. IEEE Nuclear Science Symposium Conf. Records, 2011

A Systematic Study to Optimize Crystal-SiPM Photodetectors for Highest Time Resolution; S. Gundacker, E. Auffray, B. Frish, M. Hillermanns, P. Jarron, P. Lecoq, T. Meyer, K. Pauwels. IEEE Trans. Nucl. Sci. in press, 2011

A 4D-PET Block Detector Based on Silicon Photomultipliers; S. Marcatili, N. Belcari, M. G. Bisogni, G. Collazuol, G. Sportelli, A. Santos, E. Pedreschi, F. Spinella, A. Del Guerra. IEEE Nuclear Science Symposium Conf. Records, 2010

Towards a practical solution for real-time measurement of the proton beam range in patient; D. Prieels, J. Smeets, F. Stichelbaut, A. Benilov, J.C. Dehaes, A. Dubus, F. Roellinghoff. 50th PTCOG, Philadelphia, 2011

Monte Carlo study of prompt gamma emissions for range control in hadrontherapy; J. Smeets, F. Stichelbaut, D. Prieels, J.C. Dehaes, A. Dubus, A. Benilov. Presentation, SBPH, 2011

Experimental evaluation of prompt gamma imaging with a slit camera for proton beam range measurement; J. Smeets, F. Roellinghoff, D. Prieels, F. Stichelbaut, A. Benilov, P. Busca, C. Fiorini, R. Peloso, M. Basilavecchia, T. Frizzi, J.C. Dehaes, A. Dubus. Presentation, SBPH, 2012

Proton Beam Range Monitoring by Prompt Gamma Detection: Experimental Results for 2 Collimator Types; F. Roellinghoff, A. Benilov, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J. M. Létang, D. Prieels, C. Ray, M. H. Richard, J. Smeets, F. Stichelbaut, E. Testa. Submitted to PTCOG, 2012

Experimental evaluation of prompt gamma imaging with a slit camera for real time range control in proton therapy; J. Smeets, F. Roellinghoff, D. Prieels, F. Stichelbaut, A. Benilov, P. Busca, C. Fiorini, R. Peloso, M. Basilavecchia, T. Frizzi, J.-C. Dehaes. Submitted to ESTRO, 2012



ENVISION LIST OF PUBLICATIONS



Design of a Compton camera for hadrontherapy on-line control using Geant4; M.H. Richard, D. Dauvergne, M. Dahoumane, M. De Rydt, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, X. Lojacono, V. Maxim, G. Montarou, C. Ray, F. Roellinghoff, E. Testa, A. H. Walenta. IEEE-NSS-MIC conference records, 2011

Image reconstruction for Compton camera applied to 3D prompt gamma imaging during ion beam therapy; X. Lojacono, M.H. Richard, C. Ray, D. Dauvergne, E. Testa, N. Freud, J.M. Létang, V. Maxim, R. Prost. IEEE-NSS-MIC conference records, 2011

Imaging system for QA: present status and future prospects; E. Testa, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, V. Maxim, G. Montarou, C. Ray, M.H. Richard F. Roellinghoff. Proceedings of NIRS-ETOILE 2nd Joint Symposium on Carbon Ion Therapy, pages 134-142, 2011

16-channel readout ASIC for a hodoscope in: Electronics, Circuits, and Systems (ICECS); S Deng, H Mathez, D. Dauvergne and G.N. Lu. 17th IEEE International conference ICECS, Athens, 12-15 December 2010, pages 33-36, 2010

A Tracking Compton-Scattering Imaging System for Hadron Therapy Monitoring; M. Frandes, A. Zoglauer, V. Maxim and R. Prost. IEEE Transaction in Nuclear Sciences, 57:1(144-150), 2010

Calcul de la matrice des probabilités de transfert en imagerie Compton 3D; X. Lojacono, V. Maxim, R. Prost. XXIIIe Colloque GRETSI - Traitement du Signal et des Images (GRETSI'11), Bordeaux, France, pp. 1-4, 2011

Analytical inversion of the Compton Transform using the full set of available projections; V. Maxim, M. Frandes, R. Prost. Inverse Problems, no. 9, pp. (1-31), 2009

A filtered backprojection reconstruction algorithm for Compton camera; X. Lojacono, V. Maxim, A. Zoglauer, F. Peyrin, R. Prost. Fully 3D, Potsdam, Germany, pp. 96--99, 2011

Image reconstruction for Compton camera applied to 3D prompt gamma imaging during ion beam therapy; X. Lojacono, M.H. Richard, C. Ray, D. Dauvergne, E. Testa, N. Freud, J.M. Létang, V. Maxim, R. Prost. IEEE-NSS-MIC conference records, 2011

Coincidence Tests of a Compton Telescope Based on Continuous LaBr₃ Crystals and SiPMs for Dose Monitoring in Hadron Therapy; J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. L. Taille, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, V. Stankova, I. Torres-Espallardo, G. Llosá. IEEE Nuclear Science Symposium Conference Record, 2011

Position Reconstruction in Detectors Based on Continuous Crystals Coupled to Silicon Photomultiplier Arrays; J. Cabello, J. Barrio, C. Lacasta, M. Rafecas, G. Llosá. IEEE Nuclear Science Symposium Conference Record, pp. 3911—3916, 2011

Aplicaciones de los fotomultiplicadores de silicio en imagen médica: medicina nuclear y hadronterapia; J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. L. Taille, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, V. Stankova, I. Torres-Espallardo, G. Llosá. Comunicaciones de la XXXIII Reunión Bienal de la Real Sociedad Española de Física, 2011

SiPMs in a Compton Telescope for Dose Monitoring in Hadron Therapy; G. Llosá, J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. De La Taille, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, P. Solevi, V. Stankova, I. Torres-Espallardo. HEP Tech Industry meets Academia: Beam Monitoring Instrumentation and Quality Assurance, GSI (Germany), 9-10 November 2011

Detector characterization and first coincidence tests of a Compton telescope based on LaBr₃ crystals and SiPMs; G. Llosá, J. Barrio, C. Lacasta, S. Callier, C. De La Taille, L. Raux., New Developments in Photodetectors (NDIP 2011). Lyon (France), 4-8 July 2011, NDIP 2011 NIMA proceedings, in press, 2011

A Compton imaging algorithm for on-line monitoring in hadron therapy; J. E. Gillam, C. Lacasta, I. Torres-Espallardo, C. C. Juan, G. Llosá, P. Solevi, J. Barrio, M. Rafecas. Medical Imaging 2011: Physics of Medical Imaging, 2011, volume 7961, pages 79611O, number 1, 2011

Hodoscope Coincidence Imaging for Hadron Therapy Using a Compton Camera; J. E. Gillam, I. Torres-Espallardo, C. Lacasta, P. Solevi, J. Barrio, G. Llosá, M. Rafecas: 2011 IEEE Nuclear Science Symposium and Medical Imaging Conference, Valencia, Spain, October 2011

A Compton imager for in-vivo dosimetry of proton beams – A design study; T. Kormoll, F. Fiedler, J. Wüstemann, W. Enghardt. Symposium on Radiation Measurement and Application (SORMA), Ann Arbor, Michigan, USA, 046, 24th–28th May 2010

Concept study of a Compton imager for in-vivo dosimetry of ion beams; T. Kormoll, F. Fiedler, C. Golnik et al. International Conference on Advancements in Nuclear Instrumentation Measurement Methods and their Applications (ANIMMA), 06.–09.06.2011, Gent, Belgium, 703, 2011

A prototype Compton camera for in-vivo dosimetry of ion beam cancer irradiation; T. Kormoll, F. Fiedler, C. Golnik et al. IEEE Nuclear Science Symposium and Medical Imaging Conference 2011 (NSS/MIC, Valencia, Spain), MIC15.S-278, 23rd–29th October 2011

Impact of the system matrix modelling complexity on reconstruction quality in Compton camera imaging; S. Schöne, T. Kormoll, G. Shakirin et al. 11th International Meeting on Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine, Potsdam, Germany, 11th–15th July 2011

A common approach to image reconstruction for different applications of Compton cameras; S. Schöne, G. Shakirin, T. Kormoll et al. Nuclear Science Symposium Conference Record (NSS/MIC), 2010 IEEE, S. 2292-2293, 2010

Simulation prompter g-Emissionen während therapeutischer Protonenbestrahlung; A. Müller, F. Fiedler, D. Georg et al. 3 Ländertagung der ÖGMP, DGMP und SGSMMP, Vienna, Austria, 28th September–1st October 2011



ENVISION LIST OF PUBLICATIONS



Image based in-vivo dosimetry: from PET to in-beam SPECT; F. Fiedler. 2nd Workshop on Hadron Beam Therapy of Cancer, Erice, 2011
(<http://erice2011.na.infn.it/TalkContributions/Fiedler.pdf>)

Imaging techniques for in-vivo treatment verification; K. Parodi. 2nd Workshop on Hadron Beam Therapy of Cancer, Erice, 2011
(<http://erice2011.na.infn.it/TalkContributions/Parodi.pdf>)

Development of an ion range based automatic evaluation of simulated in-beam PET images; S Helmbrecht et al. Poster, ESTRO Anniversary Congress, London (UK), May 2011

Automatische Detektion von Änderungen der Strahlreichweite bei in-beam PET Daten; P Kuess et al. Presentation at 3-Ländertagung der ÖGMP, DGMP und SGSMMP, Vienna, Austria, September 2011

Automatische Reichweitenanalyse für die Ionenstrahltherapie mittels PET; S Helmbrecht et al. Presentation at 3-Ländertagung der ÖGMP, DGMP und SGSMMP, Vienna, Austria, September 2011

Automated detection of ion beam modifications in in-beam PET images; P Kuess et al. Presentation at Radioactive Isotopes in Clinical Medicine and Research, Bad Hofgastein, Austria, January 2012

Porting a medical application to a GRID environment at the e-Science Infrastructure of IFIC; G. Amorós, J. Salt. INGRID 2011 Workshop, Santander, 6th-8th June 2011

Sample Histories from Carbon Therapy of a Human Brain; M. P. W. Chin, F. Cerutti, A. Ferrari, A. Mairani, P. R. Sala. T Am Nucl Soc, 105 55, 2011

Accollinearity for Two-Quantum Annihilation Radiation of Positrons: A Model Suited for the Monte Carlo Method; T.T. Böhlen, A. Ferrari, V. Patera. Presented at the 14th International Congress of Radiation Research, Warsaw, Poland, 28th August – 1st September 2011

First Steps towards 4D Offline PET-Based Treatment Verification at the Heidelberg Ion Beam Therapy Center; C. Kurz, J. Bauer, C. Bert, J. Jenne, F. Schoenahl, D. Unholtz, K. Parodi. Book of abstracts ICTR-PHE Conference, Geneva, Switzerland, 27th February – 2nd March , 2012

Monte Carlo modeling and in-vivo imaging for the support of high precision ion therapy; K. Parodi. Book of abstracts of the MMND & IPCT Workshop, Wollongong, Australia, (invited talk), 6th-9th December 2012

Calibration of an ultrasound tracking system for moving organs in heavy ion therapy; J. Schwaab, C. Sarti, C. Kurz, X. Zhang, A. Bongers, K. Parodi, J. Jenne. Extended abstract of the 43rd DGMP annual meeting, Jena, Germany, 26th-29th September 2012

On the feasibility of 4D off-beam PET-based treatment verification in ion beam therapy; C. Kurz, J. Bauer, D. Unholtz, D.Richter, C. Bert, R. Kaderka, K. Laube, K. Parodi. Abstract, (submitted), PTCOG52, Essen, Germany, 2013

PET-based dosimetry in particle therapy: assessing the feasibility of regional MLEM reconstruction as a quantification tool; C. Gianoli, E. De Bernardi, M. Riboldi, G. Baselli, K. Parodi, G. Baroni. IEEE Nuclear Science Symposium Medical Imaging Conference, Anaheim, California, USA, 2012

A Clinical Study on 4D PET Optimization and Quantification in Off-line Treatment Verification; C. Gianoli, J. Bauer, C. Kurz, M. Riboldi, K. Parodi, G. Baroni. Abstract (submitted), PTCOG52, Essen, Germany, 2013

Biomechanical-based respiratory motion-compensation for 4D dose calculation during hadron therapy; P. Manescu, H. Ladjal, J. Azencot, M. Beuve, B. Shariat. Extended abstract, (submitted), Heidelberg, Germany, CARS Conference, 2013

Automated detection of ion beam modification in in-beam PET images; Kuess et al. Poster, ICTR-PHE (Geneva), 27th February-2nd March 2012

A tool for semiautomatic evaluation of PET data for range verification in ion beam therapy; Helmbrecht et al. Oral Presentation, ICTR-PHE (Geneva), 27th February-2nd March 2012

An automated approach for the comparison of PET data for ion beam therapy verification; Kuess et al. Oral presentation, Alpe-Adria-Meeting, Trieste, Italy, 3rd-5th March 2012

Using statistical measures for automated comparison of in-beam PET data for ion beam therapy verification; Kuess et al. E-Poster, ESTRO 31, Barcelona, 9th-13th May 2012

Using statistical measures for automated comparison of in-beam PET data for ion beam therapy verification; Kuess et al. Poster, 8th YSA-PhD-Symposium, Vienna, 19th-20th June 2012

Experimentelle Reichweitenverifikation bei Ionenstrahlen anhand neuartiger Analyseverfahren; Helmbrecht et al. Oral presentation, 43. Jahrestagung der Deutschen Gesellschaft für Medizinische Physik, Jena, Germany, 26th-29th September 2012¹

Experimental Verification of a Semiautomatic Evaluation Tool for Particle Therapy PET; Helmbrecht et al. Oral presentation, IEEE Medical Imaging Conference, Anaheim, CA, USA, 29th October -3rd November 2012

Automated Evaluation of Set-Up Errors and Anatomical Changes in Carbon-Ion Therapy using In-Beam PET; Kuess et al. Poster, MedAustron Symposium 2012 (Wr.Neustadt), 29th.-30th November 2012

Automated detection of setup errors in carbon ion therapy using particle therapy PET: feasibility study; Kuess et al. Poster Discussion, 2nd ESTRO Forum (Geneva), 18th-23rd April 2013

¹ Helmbrecht et al. were awarded the Young Investigator Award of the Deutsche Gesellschaft für Medizinische Physik (DGMP, German Society for Medical Physics) for this contribution.



ENVISION LIST OF PUBLICATIONS



The interaction of physical and biological uncertainties in charged particle radiotherapy; Jones B. Invited Lecture, UK IPEM (Institute of Physics and Engineering in Medicine) MPEC & Biennial Radiotherapy Conference 2012, Oxford, September 2012

Sample histories from Carbon therapy of a human brain; Chin MPW, Cerutti F, Ferrari A, Mairani A, Sala PR. ICTR-PHE FEB/MAR 2012

GATE simulation of a complete proton treatment combined with prompt-gamma monitoring; Gueth P, Grevillot L, Dauvergne D, Freud N, Létang JM, Ray C, Testa E, Sarrut D. Oral presentation in IEEE Medical Imaging Conference, Anaheim, California, USA, 2012

Perturbation detection using prompt-gamma monitoring in protontherapy. In 51st annual meeting of the Particle Therapy Co-Operative Group; Gueth P, Testa E, Létang JM, Freud N, Sarrut D. 2012

Optimization of Geant4/GATE hadronic models for in-beam PET dose monitoring in carbon ion therapy; Robert C, Lestand L, Montarou G, Force P, Pauna N, Buvat I. Poster presentation, 50th PTCOG meeting, Philadelphia, 2011

Towards a practical solution for real-time measurement of the proton beam range in patient; Damien Prieels, Julien Smeets, Frédéric Stichelbaut, Arthur Benilov, Jean-Claude Dehaes, Alain Dubus, Frauke Roellinghoff. 50th PTCOG, Philadelphia, 2011

Monte Carlo study of promp gamma emissions for range control in hadrontherapy; Julien Smeets, Frédéric Stichelbaut, Damien Prieels, Jean-Claude Dehaes, Alain Dubus, Arthur Benilov. Presentation, SBPH, 2011

Real-time proton beam range monitoring by means of prompt-gamma detection with a collimated camera; F. Roellinghoff, A. Benilov, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J. M. Létang, D. Prieels, C. Ray, M. H. Richard, J. Smeets, F. Stichelbaut, E. Testa. Presentation, PHE, 2012

Prompt gamma imaging with a slit camera for real time range control in proton therapy; J. Smeets, F. Roellinghoff, D. Prieels, F. Stichelbaut, A. Benilov, P. Busca, C. Fiorini, R. Peloso, M. Basilavecchia, T. Frizzi, J.-C. Dehaes. Poster, PHE, 2012

Experimental evaluation of prompt gamma imaging with a slit camera for proton beam range measurement; J. Smeets, F. Roellinghoff, D. Prieels, F. Stichelbaut, A. Benilov, P. Busca, C. Fiorini, R. Peloso, M. Basilavecchia, T. Frizzi, J.-C. Dehaes, A. Dubus. Presentation, SBPH, 2012

Proton Beam Range Monitoring by Prompt Gamma Detection: Experimental Results for 2 Collimator Types; F. Roellinghoff, A. Benilov, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J. M. Létang, D. Prieels, C. Ray, M. H. Richard, J. Smeets, F. Stichelbaut, E. Testa. Submitted to PTCOG, 2012

Experimental evaluation of prompt gamma imaging with a slit camera for real time range control in proton therapy; J. Smeets, F. Roellinghoff, D. Prieels, F. Stichelbaut, A. Benilov, P. Busca, C. Fiorini, R. Peloso, M. Basilavecchia, T. Frizzi, J.-C. Dehaes. Submitted to ESTRO, 2012

A Prompt gamma imaging with a slit camera for real time range control in proton therapy; Smeets J, Roellinghoff F, Prieels D, Stichelbaut F, Benilov A, Busca P, Fiorini C, Peloso R, Basilavecchia M, Frizzi T, Dehaes J-C, Dubus, A. Int. Conf. on Translat. Res. in Radiat. Oncol. & Phys. For Health in Europe (ICTR-PHE) Geneva, February 2012

A Experimental evaluation of prompt gamma imaging with a slit camera for proton beam range measurement; Smeets J, Roellinghoff F, Prieels D, Stichelbaut F, Benilov A, Busca P, Fiorini C, Peloso R, Basilavecchia M, Frizzi T, Dehaes J-C, Dubus, A. 27th Ann. Symp. Belgian Hosp. Physicists Ass. (BHPA) Brussels, February 2012

Application of the HICAM camera for imaging of prompt gamma rays in measurements of proton beam range; Peloso R, Busca P, Fiorini C, Basilavecchia M, Frizzi T, Prieels D, Smeets J, Stichelbaut F, Benilov A and Roellinghoff F. 1st Topical Workshop on Modern Aspects in Nucl. Struct. Bormio, February 2012

Experimental evaluation of prompt gamma imaging with a slit camera for real time range control in proton therapy; Smeets J, Roellinghoff F, Prieels D, Stichelbaut F, Benilov A, Busca P, Fiorini C, Peloso R, Frizzi T, Dehaes J-C, ESTRO 31 Barcelona, May 2012

Application of the HICAM camera for imaging of prompt gamma rays in measurements of proton beam range; Peloso R, Busca P, Celani A, Fiorini C, Perali I, Basilavecchia M, Frizzi T, Prieels D, Smeets J, Stichelbaut F, Benilov A and Roellinghoff F. 13th Int. Conf. on Nuclear Reaction Mechanisms Varenna, June 2012

Proton beam range monitoring by prompt gamma detection: Experimental results for 2 collimator types; Roellinghoff F, Benilov A, Dauvergne D, Dedes G, Freud N, Krimmer J, Létang J-M, Prieels D, Ray C, Richard M-H, Smeets J, Stichelbaut F, Testa E. 51th Meet. Particle Therapy Co-Operative Group (PTCOG) Seoul, May 2012

Prompt gamma imaging with a slit camera for real-time range control in proton therapy: experimental validation up to 230 MeV with HICAM and development of a new prototype; Perali I, Celani A, Busca P, Marone A, Fiorini C, Basilavecchia M, Frizzi T, Roellinghoff F, Smeets J, Prieels D, Stichelbaut F, Vander Stappen F, Henrotin S, Benilov A. IEEE NSS/MIC 2012 Anaheim, November 2012

Imagerie caméra Compton en protonthérapie: simulations GATE et reconstruction d'images; E. Hilaire, C. Robert, X. Lojacono, C. Lartizien, I. Buvat and V. Maxim. Brest (France), pages submitted, XXIVe Colloque GRETSI - Traitement du Signal et des Images (GRETSI'13), 2013

Image reconstruction for Compton camera applied to 3D prompt-gamma imaging in ion beam therapy; X. Lojacono, M. -H. Richard, E. Testa, C. Ray, N. Freud, J.M. Létang, D. Dauvergne, V. Maxim and R. Prost, in: IEEE Trans Nucl Sci, submitted, 2013

Real-time prompt gamma ray monitoring for proton and carbon therapy: Monte Carlo nuclear models evaluation and improvements; G. Dedes, D. Dauvergne, M. De Rydt, N. Freud, J. Krimmer, J.M. Létang, M. Pinto, C. Ray, M. -H. Richard, F. Roellinghoff, E. Testa. International Conference on Translational Research in Radio-Oncology -- Physics for Health in Europe, Geneva, Switzerland, 2012

Online monitoring of the dose during ion therapy by means of prompt secondary radiations; E. Testa, D. Dauvergne, M. De Rydt, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, M. Pinto, C. Ray, V. Reithinger. Conference Swift Heavy Ions in Matter, Kyoto, 24-27 October 2012

Progress in using prompt gammas for ion range monitoring during hadrontherapy; J. Krimmer. International Conference on Translational Research in Radio-Oncology -- Physics for Health in Europe, Geneva, Switzerland, 2012

Real-time proton beam range monitoring by means of prompt-gamma detection with a collimated camera; F. Roellinghoff, A. Benilov, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, D. Prieels, C. Ray, M. -H. Richard, J. Smeets, F. Stichelbaut, E. Testa. ICTR-PHE, International Conference on Translational Research in Radio-Oncology and Physics for Health in Europe, CERN, Geneva, 2012

A Low Noise and High Dynamic Charge Sensitive Amplifier-Shaper associated with Silicon Strip Detector for Compton Camera in hadrontherapy. M. Dahoumane, D. Dauvergne, J. Krimmer, H Mathez, C. Ray, E. Testa. Nuclear Science Symposium and Medical Imaging Conference, IEEE, 2012

Real-Time Monitoring During Ion Therapy: Development and Evaluation of a Beam Hodoscope and Its Dedicated Electronics, M. De Rydt, S Deng, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, GN. Lu, H Mathez, K. Parodi, M. Pinto, C. Ray, V. Reithinger, M. -H. Richard, I. Rinaldi, F. Roellinghoff, E. Testa. Y Zoccaratto. Nuclear Science Symposium and Medical Imaging Conference, IEEE, 2012

Monte Carlo Nuclear Models Evaluation and Improvements for Real-Time Prompt Gamma-Ray Monitoring in Proton and Carbon Therapy; G. Dedes, D. Dauvergne, M. De Rydt, N. Freud, J. Krimmer, J.M. Létang, M. Pinto, C. Ray, E. Testa. Nuclear Science Symposium and Medical Imaging Conference, IEEE, 2012

Very fast front end ASIC associated with multi anode PMT for a scintillating-fibre beam hodoscope, S Deng, D. Dauvergne, GN. Lu, H Mathez, Y Zoccaratto. TWEPP 2012 Topical Workshop on Electronics for Particle Physics, Oxford, pages 2013 JINST 8 C01047, IOP Publishing for Sissa Medialab, 11th-13th September 2012

Reconstruction tomographique pour l'imagerie SPECT avec une caméra Compton, V. Maxim. XIème Colloque Franco-Roumain de Mathématiques Appliquées, Bucharest (Romania), p. 74, 2012

Algorithmes LM-MLEM pour la reconstruction d'images pour caméra Compton ; X. Lojacono, E. Hilaire, R. Prasad, V. Maxim, R. Prost. Nouvelles méthodologies en imagerie du vivant (IMAGIV), Lyon, France, pages 9385--9385, 2012

Real-time monitoring of the ion range by means of prompt-secondary radiation; E. Testa, L. Balleyguier, J. Baudot, S. Brons, L. Caponetto, M. Dahoumane, D. Dauvergne, R. Della-Negra, S Deng, M. De Rydt, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, H Mathez, K. Parodi, M. Pinto, C. Ray, M. -H. Richard, V. Reithinger, I. Rinaldi, F. Roellinghoff, M. Winter, Y Zoccaratto. Nouvelles Méthodologies en imagerie du vivant, Lyon, pages 9585,11-13th December 2012

Design Study of the Absorber Detector of a Compton Camera for On-line Control in Ion Beam Therapy, M. -H. Richard. To be published in IEEE TNS

Design of a Compton camera for hadrontherapy on-line control using Geant4; M. -H. Richard, D. Dauvergne, M. Dahoumane, M. De Rydt, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, X. Lojacono, V. Maxim, G. Montarou, C. Ray, F. Roellinghoff, E. Testa , A. H. Walenta. IEEE-NSS-MIC conference records, 2011

Image reconstruction for Compton camera applied to 3D prompt gamma imaging during ion beam therapy; X. Lojacono, M. -H. Richard, C. Ray, D. Dauvergne, E. Testa, N. Freud, J.M. Létang, V. Maxim, R. Prost. IEEE-NSS-MIC conference records, 2011

Imaging system for QA: present status and future prospects; E. Testa, D. Dauvergne, G. Dedes, N. Freud, J. Krimmer, J.M. Létang, V. Maxim, G. Montarou, C. Ray, M. -H. Richard, F. Roellinghoff. Proceedings of NIRS-ETOILE 2nd Joint Symposium on Carbon Ion Therapy, pages 134-142, 2011

16-channel readout ASIC for a hodoscope, in: Electronics, Circuits, and Systems (ICECS); S. Deng, H. Mathez, D. Dauvergne, GN Lu. 17th IEEE International conference ICECS, Athens, pages 33-36, 12th-15th December 2010

A Tracking Compton-Scattering Imaging System for Hadron Therapy Monitoring; M. Frandes, A. Zoglauer, V. Maxim, R. Prost. IEEE Transaction in Nuclear Sciences, 57:1(144-150), 2010

Calcul de la matrice des probabilités de transfert en imagerie Compton 3D; X. Lojacono, V. Maxim, R. Prost. XXIIIe Colloque GRETSI - Traitement du Signal et des Images (GRETSI'11), Bordeaux, France, pp. 1-4, 2011.

Analytical inversion of the Compton Transform using the full set of available projections, V. Maxim, M. Frandes, R. Prost. Inverse Problems, no. 9, pp. 1-31, 2009

A filtered backprojection reconstruction algorithm for Compton camera; X. Lojacono, V. Maxim, A. Zoglauer, F. Peyrin, R. Prost. Fully 3D, Potsdam, Germany, pp. 96--99, 2011

Image reconstruction for Compton camera applied to 3D prompt gamma imaging during ion beam therapy; X. Lojacono, M. -H. Richard, C. Ray, D. Dauvergne, E. Testa, N. Freud, J.M. Létang, V. Maxim, R. Prost. IEEE-NSS-MIC conference records, 2011

Silicon Photomultipliers in PET and Hadron Therapy applications; G. Llosá, J. Barrio, M.G. Bisogni, J. Cabello, A. Del Guerra, J. E. Gillam, C. Lacasta, J. F. Oliver, M. Rafecas, C. Solaz, P. Solevi, V. Stankova, I. Torres-Espallardo, M. Trovato. Poster. ICTR-PHE 2012, Geneva (Switzerland), Published: Radiotherapy and Oncology, Vol. 102 (2012), Suppl. 1, 27th February-2nd March 2012

Comparison of Prompt-gamma and Positron imaging for hadron- therapy monitoring; I. Torres-Espallardo; J. E. Gillam; P. Solevi; G. Llosá; V. Stankova; J. Barrio; C. Solaz; M. Trovato; C. Lacasta; M. Rafecas. ,Talk

ICTR-PHE 2012. Geneva (Switzerland), published: Radiotherapy and Oncology, Vol. 102 (2012), Suppl. 1, pp. S145-S146, 27th February-2nd March 2012

Compton Telescope prototype based on LaBr₃-SiPM detectors; G. Llosá, J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, V. Stankova, C. de La Taille. Talk, Frontier Detectors for Frontier Physics, 12th Pisa Meeting on Advanced Detectors, La Biodola, Isola d'Elba, 20-26 May 2012

Test of a Compton Telescope Prototype Based on Continuous LaBr₃ Crystals and Silicon Photomultipliers; M. Trovato, J. Barrio, J. Cabello, S. Callier, J. Gillam, C. De La Taille, C. Lacasta, M. Rafecas, C. Solaz, V. Stankova, I. Torres-Espallardo, L. Raux, G. Llosa. Poster, IEEE NSS MIC. Anaheim, California (USA), published: IEEE NSS MIC Conf Record. M16-65, 29th October-3rd November 2012

Simulated One Pass Listmode for Fully 3D Image Reconstruction of Compton Camera Data; J. E. Gillam, J. F. Oliver, I. Torres-Espallardo, C. Lacasta, G. Llosa, M. Trovato, J. Barrio, J. Cabello, V. Stankova, C. Solaz, M. Rafecas. Poster, 2012 IEEE NSS MIC. Anaheim (USA), published: IEEE NSS MIC Conf Record. M17-5, 29th October-3rd November 2012

Multichannel DAQ System for SiPM Matrices; V. K. Stankova, C. Lacasta, C. Solaz, G. Llosa, M. Trovato, J. E. Gillam, M. Rafecas. Poster, 2012 IEEE NSS MIC. Anaheim (USA), published: IEEE NSS MIC Conf Record. N14-107, 29th October-3rd November 2012

Coincidence Tests of a Compton Telescope Based on Continuous LaBr₃ Crystals and SiPMs for Dose Monitoring in Hadron Therapy; J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. L. Taille, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, V. Stankova, I. Torres-Espallardo, G. Llosá. IEEE Nuclear Science Symposium Conference Record, 2011

Position Reconstruction in Detectors Based on Continuous Crystals Coupled to Silicon Photomultiplier Arrays; J. Cabello, J. Barrio, C. Lacasta, M. Rafecas, G. Llosá. IEEE Nuclear Science Symposium Conference Record, pp. 3911—3916, 2011

Aplicaciones de los fotomultiplicadores de silicio en imagen médica: medicina nuclear y hadronterapia; J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. L. Taille, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, V. Stankova, I. Torres-Espallardo, G. Llosá. Comunicaciones de la XXXIII Reunión Bienal de la Real Sociedad Española de Física, 2011

SiPMs in a Compton Telescope for Dose Monitoring in Hadron Therapy; G. Llosá, J. Barrio, J. Cabello, S. Callier, J. E. Gillam, C. De La Taille, C. Lacasta, M. Rafecas, L. Raux, C. Solaz, P. Solevi, V. Stankova, I. Torres-Espallardo. HEPTech Industry meets Academia: Beam Monitoring Instrumentation and Quality Assurance, GSI (Germany) 9th-10th November 2011

Detector characterization and first coincidence tests of a Compton telescope based on LaBr₃ crystals and SiPMs; G. Llosá, J. Barrio, C. Lacasta, S. Callier, C. De La Taille, L. Raux. New Developments in Photodetectors (NDIP 2011), Lyon (France), NDIP 2011 NIMA proceedings. in press, 4th-8th July 2011

A Compton imager for in-vivo dosimetry of proton beams – A design study; T. Kormoll, F. Fiedler, J. Wüstemann, W. Enghardt. Symposium on Radiation Measurement and Application (SORMA), Ann Arbor, Michigan, USA, 046, 24th–28th May 2010

Concept study of a Compton imager for in-vivo dosimetry of ion beams; T. Kormoll, F. Fiedler, C. Golnik et al. International Conference on Advancements in Nuclear Instrumentation, Measurement Methods and their Applications (ANIMMA), Gent, Belgium, 703, 06th–09th June 2011

A prototype Compton camera for in-vivo dosimetry of ion beam cancer irradiation; T. Kormoll, F. Fiedler, C. Golnik et al. IEEE Nuclear Science Symposium and Medical Imaging Conference 2011 (NSS/MIC), Valencia, Spain, MIC15.S-278, 23rd–29th October 2011

Impact of the system matrix modelling complexity on reconstruction quality in Compton camera imaging; S. Schöne, T. Kormoll, G. Shakirin et al. 11th International Meeting on Fully Three-Dimensional Image Reconstruction in Radiology and Nuclear Medicine, 11th–15th July 2011, Potsdam, Germany, 2011

A common approach to image reconstruction for different applications of Compton cameras; S. Schöne, G. Shakirin, T. Kormoll et al. Nuclear Science Symposium Conference Record (NSS/MIC), 2010 IEEE, S. 2292-2293, 2010

Simulation prompter g-Emissionen während therapeutischer Protonenbestrahlung; A. Müller, F. Fiedler, D. Georg et al. 3 Ländertagung der ÖGMP, DGMP und SG SMP, Vienna, Austria, 28th September–1st October 2011

Reconstructing Compton camera images for ion therapy monitoring; S. Schöne, W. Enghardt, T. Kormoll et al. ICTR-PHE, Radiotherapy & Oncology, 102 (2012) Suppl., S145, March 2012

In-beam SPECT based in vivo dosimetry - From treatment planning to measured dose; A. Müller, F. Fiedler, D. Georg et al. ICTR-PHE, Radiotherapy & Oncology, 102 (2012) Suppl., S47-S48, March 2012

Monte-Carlo simulation to optimize SPECT-hardware dedicated to in-beam control of particle therapy; Rohling, H., Dersch, U., Fiedler, F., Golnik, C., Kormoll, T., Müller, A., Schöne, S., Enghardt, W. ICTR-PHE, Radiotherapy & Oncology, 102 (2012) Suppl., S46, March 2012



Techniques for image based in-vivo dosimetry: from particle therapy pet to in-beam prompt gamma imaging; Fiedler, F., Dersch, U., Golnik, C., Helmbrecht, S., Kormoll, T., Kunath, D., Laube, K., Müller, A., Priegnitz, M., Rohling, H., Schöne, S., Enghardt, W. ICTR-PHE, Radiotherapy & Oncology, 102 (2012) Suppl., S40-S41, March 2012

Imaging of point sources with a Compton camera for in-vivo dose monitoring of ion beam irradiation; Kormoll, T., Fiedler, F., Golnik, C., Heidel, K., Kempe, M., Schoene, S., Sobiella, M., Zuber, K., Enghardt, W. ICTR-PHE, Radiotherapy & Oncology, 102(2012) Suppl., S41-S42, March 2012

A Compton Imaging Prototype for in-Vivo Dosimetry at Therapeutic Proton and Ion Beams, C. Golnik, U. Dersch, F. Fiedler, K. Heidel, T. Kormoll, A. Mueller, H. Rohling, S. Schoene, M. Sobiella, W. Enghard. IEEE NSS MIC, Anaheim, California, USA, published, IEEE NSS MIC Conf Record, M16-12, 29th October- 3rd November 2012

Techniques for Image Based in-vivo Dosimetry: from Particle Therapy PET to in-beam Prompt Gamma Imaging; Fiedler, F., Golnik, C., Helmbrecht, S., Kormoll, T., Kunath, D., Laube, K., Mueller, A., Priegnitz, M., Rohling, H., Schoene, S., Enghardt, W. IEEE NSS MIC, Hadron Therapy Workshop, Anaheim, California, USA, 29th October- 3rd November 2012

Status of the Development of a Single Gamma-Ray Imaging System for in-vivo Dosimetry at Particle Beams; Fiedler, F., Golnik, C., Kormoll, T., Mueller, A., Rohling, H., Schoene, S., Enghardt, W. IEEE NSS MIC, Anaheim, California, USA, 29th October- 3rd November 2012

Techniques for Image Based In-Vivo Dosimetry: From Particle Therapy PET to In-Beam Prompt Gamma Imaging; F. Fiedler. Micro- Mini- and Nano- Dosimetry & International Prostate Cancer Treatment Workshop, Wollongong, Australia, 6th – 9th December 2012

Tomography, data processing and image reconstruction for medicine and engineering; S. Schoene. Image Reconstruction for Compton Cameras, Workshop, Helmholtz-Zentrum, Dresden-Rossendorf 10th – 12th September 2012

Theses

Development of a Time-of-Flight Positron Emission Tomography system for dose monitoring in Hadrontherapy; G. Borghi. Master Thesis at Università Milano Bicocca, Italy, 2011

Simulations Monte Carlo et mesures de l'émission de gamma prompts appliquées au contrôle en ligne en hadronthérapie; F. Le Foulher. Thesis, Université Lyon 1, 2010

Physical measurements for ion range verification in charged particle therapy; M. Testa. Thesis, Université Lyon 1, Institut de Physique Nucléaire de Lyon, 2010

Gamma-ray detection and Compton camera image reconstruction with application to hadron therapy; M. Frandes. Thesis, INSA Lyon, 2010

Etude de l'émission de particules chargées secondaires dans l'optique d'un monitorage faisceau et de la dosimétrie en ligne en hadronthérapie; P. Henriet. Thesis, Université Lyon 1, 2011

Development of a Monte Carlo tool to verify Treatment Planning in proton therapy at CNAO; A. Panfili. Thesis at Univ. of Milano, Nov. 2011

Study of the possibility of dose profile monitoring in hadrontherapy with carbon ions by detection of particles emitted during the treatment; E. Vitale. Thesis at Univ. of Milano, Nov. 2011

Simulations Monte Carlo et mesures de l'émission de gamma prompts appliquées au contrôle en ligne en hadronthérapie; F. Le Foulher. Thesis, Université Lyon 1, 2010

Physical measurements for ion range verification in charged particle therapy; M. Testa. Thesis, Université Lyon 1, Institut de Physique Nucléaire de Lyon, 2010

Gamma-ray detection and Compton camera image reconstruction with application to hadron therapy; M. Frandes. Thesis, INSA Lyon, 2010

Etude de l'émission de particules chargées secondaires dans l'optique d'un monitorage faisceau et de la dosimétrie en ligne en hadronthérapie; P. Henriet. Thesis, Université Lyon 1, 2011

Etude de conception d'ASICs de lecture et d'étiquetage en temps associés à des photomultiplicateurs pour un hodoscope de faisceau en hadronthérapie; S. Deng. Thèse, Université Claude Bernard Lyon 1, 2012

Design Study of a Compton Camera for Prompt-Gamma Imaging during Ion Therapy; M.-H. Richard. Thesis, Université Claude Bernard Lyon 1, 2012

Other publications

Verification of ion range in moving targets with in-beam PET; K. Laube, C. Bert, F. Fiedler, S. Helmbrecht, M. Priegnitz, N. Saito, W. Enghardt. GSI Scientific Report for 2011, 2012

Gated phantom irradiation for 4D in-beam and 4D off-beam PET comparison; K. Laube, C. Bert, F. Fiedler, S. Helmbrecht, R. Kaderka, C. Kurz, K. Parodi, N. Saito, Y. Tian, W. Enghardt. GSI Scientific Report for 2012 (submitted), 2013