Georg SCHRAMM

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Personal Details

date of birth	08 April 1987
place of birth	Görlitz, Germany
nationality	German

Education

Jan 2015 — **PhD in medical imaging**, TU Dresden, Germany.
Thesis: "Evaluation and Improvement of MR-based attenuation correction in PET/MRI."
final mark: summa cum laude

Apr 2011 — **Master in (nuclear and particle) physics**, TU Dresden, Germany.
Thesis: "Simulation and analysis of neutron capture and photon scattering experiments."

Experiences

since Apr 2015 — **Postdoctoral researcher**, KU Leuven, Belgium, Department of Imaging and Pathology, Division of Nuclear Medicine.
As a PostDoc in the lab of Prof. Johan Nuyts, I am investigating joint advanced method for iterative PET image reconstruction and the application of deep learning in PET reconstruction and image analysis. Moreover, I am heavily interested and involved in the translation of our research into clinical routine.

Jan 2015 - Mar 2015 — **Scientist**, Helmholtz-Zentrum Dresden-Rossendorf (HZDR), Institute for Radiopharmaceutical Cancer Research.

May 2011 - Jan 2015 — **PhD student**, HZDR, Institute for Radiopharmaceutical Cancer Research.
As a PhD student in the lab of Prof. Jörg van den Hoff, I was evaluating and improving whole-body MR-based attenuation correction using one of the first combined PET/MR systems world-wide.

since Apr 2019 — **Active member in the KU Leuven PostDoc Society**.
I am involved in organizing career and networking events for PostDocs and in the preparation of a PostDoc charta for KU Leuven.

Apr 2013 - Feb 2015 — **member of the management board of Werkstatt BigBand Dresden e.V.**.
In our student big band, I was organizing concerts, rehearsal weekends and finances.

Sep 2009 - Mar 2010 — **Semester abroad**, University of Sheffield, UK.
During my Erasmus semester in Sheffield, I was studying astronomy and applied mathematics

Aug 2008 - Jul 2009 — **Student research assistant**, HZDR Institute of Radiation Physics.
As an assistant, I was analysing neutron TOF and tranmission data and typesetting a lecture manuscript in latex.

Language Skills

German	native
English	fluent
Dutch	basic

Teaching

since 2017 Techniques and technologies in Nuclear Medicine (assistant for Prof. J. Nuyts)

since 2017 Medical Imaging (assistant for Prof. P. Suetens and Prof. F. Maes)

Awards

Nov 2019 **Best Poster Award 2nd place**.
Synergistic Reconstruction Symposium, Chester

Mar 2015 **PhD Award**.
Yearly award for the best PhD thesis at HZDR

Mar 2014 **Award for notable achievements in nuclear medicine imaging**.
German Society of Nuclear Medicine

Mar 2014 **Travel grant for RSNA 2014 for the best oral presentation of a young investigator.**.
Annual meeting of the German Society of Nuclear Medicine

May 2012 **Award for the best oral presentation of a young investigator.**.
International conference on PET/MRI and SPECT/MRI. La Biodola, Italy

Jan 2012 **Ehrenfried Walter von Tschirnhaus Urkunde**.
Yearly given to the five best graduates of the faculty of science at TU Dresden

Invited Talks

Nov 2019 **State of the art of AI for medical image reconstruction and corrections**.
IEEE MIC 2019 workshop: Emergence and perspectives of artificial intelligence (AI) methods in radiation-based imaging sciences, Manchester

Oct 2017 **MR-based attenuation correction for the body**.
Annual congress of the European Association for Nuclear Medicine, Vienna

Sep 2017 **Positron Emission Tomography - an introduction and overview about current developments**.
International workshop on positron studies on defects 2017, Dresden

Research Interests

PET PET image reconstruction
quantitative PET imaging
PET image analysis
hybrid PET/MR imaging
Deep learning in medical image reconstruction and analysis

Reviewer for J Nucl Med, Eur J Nucl Med, IEEE TMI, Eur J Nucl Med Phys

Skills

programming Python, keras, tensorflow, IDL, matlab, R, C, C++, bash, git, cmake, openmp

mathematics numerics, inverse problems and convex optimization in medical imaging

clinical PET imaging more than 8 years of experience in clinical operation of a PET/MRI scanner

Leuven, December 7, 2020

First author publications

G Schramm, D Rigie, T Vahle, A Rezaei, K Van Laere, T Shepherd, J Nuyts, F Boada
Approximating anatomically-guided PET reconstruction in image space using a convolutional neural network
NeuroImage 224:117399 (2020)

G Schramm, M Koole, S Willekens, A Rezaei, D Van Weehaeghe, G Delso, R Peeters, N Mertens, J Nuyts, K Van Laere
Regional accuracy of ZTE-based attenuation correction in static [18 F] FDG and dynamic [18 F] PE2I brain PET/MR
Frontiers in Physics 7:211 (2019)

G Schramm, C Ladefoged
Metal artifact correction strategies in MRI-based attenuation correction in PET/MRI
BJR| Open 1:20190033 (2019)

G Schramm, M Holler, A Rezaei, K Vunckx, F Knoll, K Bredies, F Boada, J Nuyts
Evaluation of parallel level sets and Bowsher's method as segmentation-free anatomical priors for time-of-flight PET reconstruction
IEEE transactions on medical imaging 37:590–603 (2017)

G Schramm, J Maus, F Hofheinz, J Petr, A Lougovski, B Beuthien-Baumann, L Oehme, I Platzek, J van den Hoff
Correction of quantification errors in pelvic and spinal lesions caused by ignoring higher photon attenuation of bone in [18F] NaF PET/MR
Medical physics 42:6468–6476 (2015)

G Schramm, J Maus, F Hofheinz, J Petr, A Lougovski, B Beuthien-Baumann, I Platzek, J van den Hoff
Evaluation and automatic correction of metal-implant-induced artifacts in MR-based attenuation correction in whole-body PET/MR imaging
Physics in Medicine & Biology 59:2713 (2014)

G Schramm, J Langner, F Hofheinz, J Petr, B Beuthien-Baumann, I Platzek, J Steinbach, J Kotzerke, J van den Hoff
Quantitative accuracy of attenuation correction in the Philips Ingenuity TF whole-body PET/MR system: a direct comparison with transmission-based attenuation correction
Magnetic Resonance Materials in Physics, Biology and Medicine 26:115–126 (2013)

G Schramm, J Langner, F Hofheinz, J Petr, A Lougovski, B Beuthien-Baumann, I Platzek, J van den Hoff
Influence and compensation of truncation artifacts in MR-based attenuation correction in PET/MR
IEEE transactions on medical imaging 32:2056–2063 (2013)

G Schramm, R Massarczyk, A Junghans, T Belgya, R Beyer, E Birgersson, E Grosse, M Kempe, Z Kis, K Kosev et al.
Dipole strength in 78 Se below the neutron separation energy from a combined analysis of 77 Se (n, γ) and 78 Se (γ, γ') experiments
Physical Review C 85:014311 (2012)

Co-author publications

D Van Weehaeghe, S Babu, J De Vocht, N Zurcher, S Chew, C Tseng, M Loggia, M Koole, A Rezaei, G Schramm et al.
Moving towards multicenter therapeutic trials in ALS: feasibility of data pooling using different TSPO positron emission tomography (PET) radioligands.
Journal of Nuclear Medicine (2020)

J van Aalst, J Ceccarini, G Schramm, D Van Weehaeghe, A Rezaei, K Demyttenaere, S Sunaert, K Van Laere
Long-term Ashtanga yoga practice decreases medial temporal and brainstem glucose metabolism in relation to years of experience
EJNMMI research 10:1–8 (2020)

D Van Weehaeghe, M Devrome, G Schramm, J De Vocht, W Deckers, K Baete, P Van Damme, M Koole, K Van Laere
Combined brain and spinal FDG PET allows differentiation between ALS and ALS mimics
European Journal of Nuclear Medicine and Molecular Imaging (2020)

X Tang, E Jafargholi Rangraz, W Coudyzer, J Bertels, D Robben, G Schramm, W Deckers, G Maleux, K Baete, C Verslype et al.
Whole liver segmentation based on deep learning and manual adjustment for clinical use in SIRT
European Journal of Nuclear Medicine and Molecular Imaging (2020)

J De Vocht, J Blommaert, M Devrome, A Radwan, D Van Weehaeghe, M De Schaepdryver, J Ceccarini, A Rezaei, G Schramm, J van Aalst et al.
Use of Multimodal Imaging and Clinical Biomarkers in Presymptomatic Carriers of C9orf72 Repeat Expansion
JAMA Neurology (2020)

J De Vocht, A Chio, M Pagani, D Stam, H Van Esch, N Lamaire, M Verhaegen, N Mertens, K Poesen, L van den Berg et al.
A multi-modal biomarker study reveals early brain 18F FDG-PET changes at single subject level in presymptomatic C9orf72 repeat expansion carriers
Jama Neurology (2020)

R Boudewijns, H Thibaut, S Kaptein, R Li, V Vergote, L Seldeslachts, J Van Weyenbergh, C De Keyzer, L Bervoets, S Sharma et al.
STAT2 signaling restricts viral dissemination but drives severe pneumonia in SARS-CoV-2 infected hamsters
Nature communications 11:1–10 (2020)

Y Tsai, G Schramm, S Ahn, A Bousse, S Arridge, J Nuyts, B Hutton, C Stearns, K Thielemans
Benefits of Using a Spatially-Variant Penalty Strength With Anatomical Priors in PET Reconstruction
IEEE Transactions on Medical Imaging 39:11–22 (2019)

A Rezaei, G Schramm, S Willekens, G Delso, K Van Laere, J Nuyts
A Quantitative Evaluation of Joint Activity and Attenuation Reconstruction in TOF PET/MR Brain Imaging
Journal of Nuclear Medicine 60:1649–1655 (2019)

A Rezaei, G Schramm, K Van Laere, J Nuyts
Estimation of crystal timing properties and efficiencies for the improvement of (joint) maximum-likelihood reconstructions in TOF-PET
IEEE Transactions on Medical Imaging 39:952–963 (2019)

F Hofheinz, J Maus, S Zschaeck, J Rogasch, G Schramm, L Oehme, I Apostolova, J Kotzerke, J van den Hoff
Interobserver variability of image-derived arterial blood SUV in whole-body FDG PET
EJNMMI research 9:23 (2019)

G Degtiarova, P Claus, J Duchenne, M Cvijic, G Schramm, J Nuyts, J Voigt, O Gheysens
Low septal to lateral wall 18 F-FDG ratio is highly associated with mechanical dyssynchrony in non-ischemic CRT candidates
Ejnmmi Research 9:105 (2019)

G Degtiarova, P Claus, J Duchenne, G Schramm, J Nuyts, H Verberne, J Voigt, O Gheysens
Impact of left bundle branch block on myocardial perfusion and metabolism: A positron emission tomography study
Journal of Nuclear Cardiology (2019)

I Platzek, B Beuthien-Baumann, G Schramm, J Maus, M Laniado, J Kotzerke, J van den Hoff, M Schuler
FDG PET/MR in initial staging of sarcoma: Initial experience and comparison with conventional imaging
Clinical Imaging 42:126–123 (2017)

R Wodtke, G Schramm, J Pietzsch, M Pietsch, R Löser
Synthesis and kinetic characterisation of water-soluble fluorogenic acyl donors for transglutaminase 2
ChemBioChem 17:1263–1281 (2016)

J Petr, I Platzek, A Seidlitz, H Mutsaerts, F Hofheinz, G Schramm, J Maus, B Beuthien-Baumann, M Krause, J Van Den Hoff
Early and late effects of radiochemotherapy on cerebral blood flow in glioblastoma patients measured with non-invasive perfusion MRI
Radiotherapy and Oncology 118:24–28 (2016)

R Massarczyk, G Schramm, T Belgya, R Schwengner, R Beyer, D Bemmerer, Z Elekes, E Grosse, R Hannaske, A Junghans et al.
Role of electric and magnetic dipole strength functions in the Cd 114 (γ, γ') and Cd 113 (n, γ) reactions
Physical Review C 93:014301 (2016)

J Maus, G Schramm, F Hofheinz, L Oehme, A Lougovski, J Petr, I Platzek, B Beuthien-Baumann, J Steinbach, J Kotzerke et al.
Evaluation of in vivo quantification accuracy of the Ingenuity-TF PET/MR
Medical physics 42:5773–5781 (2015)

A Lougovski, F Hofheinz, J Maus, G Schramm, J Van den Hoff
On the relation between Kaiser–Bessel blob and tube of response based modelling of the system matrix in iterative PET image reconstruction
Physics in Medicine & Biology 60:4209 (2015)

J van den Hoff, A Lougovski, G Schramm, J Maus, L Oehme, J Petr, B Beuthien-Baumann, J Kotzerke, F Hofheinz
Correction of scan time dependence of standard uptake values in oncological PET
EJNMMI research 4:18 (2014)

I Platzek, B Beuthien-Baumann, R Ordemann, J Maus, G Schramm, H Kitzler, M Laniado, J Kotzerke, J van den Hoff
FDG PET/MR for the assessment of lymph node involvement in lymphoma: initial results and role of diffusion-weighted MR
Academic Radiology 21:1314–1319 (2014)

J Petr, G Schramm, F Hofheinz, J Langner, J van den Hoff
Modeling magnetization transfer effects of Q2TIPS bolus saturation in multi-TI pulsed arterial spin labeling
Magnetic resonance in medicine 72:1007–1014 (2014)

J Maus, F Hofheinz, G Schramm, L Oehme, B Beuthien-Baumann, M Lukas, R Buchert, J Steinbach, J Kotzerke, J van den Hoff et al.
Evaluation of PET quantification accuracy in vivo
Nuklearmedizin 53:67–77 (2014)

R Massarczyk, R Schwengner, F Dönau, S Frauendorf, M Anders, D Bemmerer, R Beyer, C Bhatia, E Birgersson, M Butterling et al.
Nuclear deformation and neutron excess as competing effects for dipole strength in the pygmy region
Physical Review Letters 112:072501 (2014)

A Lougovski, F Hofheinz, J Maus, G Schramm, E Will, J Van den Hoff
A volume of intersection approach for on-the-fly system matrix calculation in 3D PET image reconstruction
Physics in Medicine & Biology 59:561 (2014)

I Apostolova, J Rogasch, R Buchert, H Wertzel, H Achenbach, J Schreiber, S Riedel, C Furth, A Lougovski, G Schramm et al.
Quantitative assessment of the asphericity of pretherapeutic FDG uptake as an independent predictor of outcome in NSCLC
BMC cancer 14:1–10 (2014)

J van den Hoff, L Oehme, G Schramm, J Maus, A Lougovski, J Petr, B Beuthien-Baumann, F Hofheinz
The PET-derived tumor-to-blood standard uptake ratio (SUR) is superior to tumor SUV as a surrogate parameter of the metabolic rate of FDG
EJNMMI research 3:77 (2013)

J Van den Hoff, F Hofheinz, L Oehme, G Schramm, J Langner, B Beuthien-Baumann, J Steinbach, J Kotzerke
Dual time point based quantification of metabolic uptake rates in 18 F-FDG PET
EJNMMI research 3:16 (2013)

I Platzek, B Beuthien-Baumann, J Langner, M Popp, G Schramm, R Ordemann, M Laniado, J Kotzerke, J van den Hoff
PET/MR for therapy response evaluation in malignant lymphoma: initial experience
Magnetic Resonance Materials in Physics, Biology and Medicine 26:49–55 (2013)

J Petr, G Schramm, F Hofheinz, J Langner, J van den Hoff
Partial volume correction in arterial spin labeling using a Look-Locker sequence
Magnetic resonance in medicine 70:1535–1543 (2013)

R Massarczyk, G Schramm, A Junghans, R Schwengner, M Anders, T Belgya, R Beyer, E Birgersson, A Ferrari, E Grosse et al.
Electromagnetic dipole strength up to the neutron separation energy from 196 Pt (γ, γ') and 195 Pt (n, γ) reactions
Physical Review C 87:044306 (2013)

R Hannaske, Z Elekes, R Beyer, A Junghans, D Bemmerer, E Birgersson, A Ferrari, E Grosse, M Kempe, T Kögler et al.
Neutron total cross section measurements of gold and tantalum at the nELBE photoneutron source
The European Physical Journal A 49:137 (2013)

R Massarczyk, R Schwengner, F Dönau, E Litvinova, G Rusev, R Beyer, R Hannaske, A Junghans, M Kempe, J Kelley et al.
Electromagnetic dipole strength of 136 Ba below the neutron separation energy
Physical Review C 86:014319 (2012)

B Beuthien-Baumann, I Platzek, I Lauterbach, J van den Hoff, G Schramm, K Zöphel, M Laniado, J Kotzerke
Improved anatomic visualization of a glomus caroticum tumour within the carotic bifurcation with combined 68 Ga-DOTATATE PET/MRI
European journal of nuclear medicine and molecular imaging 39:1087–1088 (2012)

R Beyer, E Birgersson, A Junghans, R Massarczyk, G Schramm, R Schwengner, E Grosse
Electromagnetic strength in heavy nuclei–experiments and a global fit
International Journal of Modern Physics E 20:431–442 (2011)