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, pytorch, IDL, matlab, R, C, C++, bash, git, cmake, openmp, cuda

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, January 27, 2022

Publications

Google scholar profile link

ORCID ID link

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 (2021)

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 [18F]FDG and Dynamic [18F]PE2I Brain PET/MR
Frontiers In Physics 7:1–11 (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 (2018)

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 [F-18]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 and Biology 59:2713–2726 (2014)

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, 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 Biology, Physics and Medicine 26:115–126 (2012)

G Schramm, R Massarczyk, A Junghans, T Belgya, R Beyer, E Birgersson, E Grosse, M Kempe, Z Kis, K Kosev, M Krticka, A Matic, K Schilling, R Schwengner, L Szentmiklosi, A Wagner, J Weil
Dipole strength in Se-78 below the neutron separation energy from a combined analysis of Se-77(n, gamma)and Se-78(gamma, gamma ') experiments
Physical Review C 85:0143111–01431114 (2012)

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

Co-author publications

L Seldeslachts, C Cawthorne, S Kaptein, R Boudewijns, H Thibaut, L Sanchez Felipe, S Sharma, G Schramm, B Weynand, K Dallmeier, G Vande Velde
Use of Micro-Computed Tomography to Visualize and Quantify COVID-19 Vaccine Efficiency in Free-Breathing Hamsters.
Methods Mol Biol 2410:177–192 (2022)

G Degtiarova, P Claus, J Duchenne, G Schramm, J Nuyts, J Bogaert, G Vöros, R Willems, H Verberne, J Voigt, O Gheysens
Can nuclear imaging accurately detect scar in ischemic cardiac resynchronization therapy candidates?
Nucl Med Commun (2022)

M Vergara, A Rezaei, G Schramm, M Rodriguez-Alvarez, J Baviera, J Nuyts
2-D Feasibility Study of Joint Reconstruction of Attenuation and Activity in Limited Angle TOF-PET
IEEE TRANSACTIONS ON RADIATION AND PLASMA MEDICAL SCIENCES 5:712–722 (2021)

J van Aalst, M Devrome, D Van Weehaeghe, A Rezaei, A Radwan, G Schramm, J Ceccarini, S Sunaert, M Koole, K Van Laere
Regional glucose metabolic decreases with ageing are associated with microstructural white matter changes: a simultaneous PET/MR study
EUROPEAN JOURNAL OF NUCLEAR MEDICINE AND MOLECULAR IMAGING (2021)

D Schaart, G Schramm, J Nuyts, S Surti
Time of Flight in Perspective: Instrumental and Computational Aspects of Time Resolution in Positron Emission Tomography
IEEE Transactions on Radiation and Plasma Medical Sciences 5:598–618 (2021)

A Rezaei, M Spangler-Bickell, G Schramm, K Van Laere, J Nuyts, M Defrise
Rigid motion tracking using moments of inertia in TOF-PET brain studies
PHYSICS IN MEDICINE AND BIOLOGY 66 (2021)

A Reader, G Schramm
Artificial Intelligence for PET Image Reconstruction
JOURNAL OF NUCLEAR MEDICINE 62:1330–1333 (2021)

S Meikle, V Sossi, E Roncali, S Cherry, R Banati, D Mankoff, T Jones, M James, J Sutcliffe, J Ouyang, Y Petibon, C Ma, G El Fakhri, S Surti, J Karp, R Badawi, T Yamaya, G Akamatsu, G Schramm, A Rezaei, J Nuyts, R Fulton, A Kyme, C Lois, H Sari, J Price, R Boellaard, R Jeraj, D Bailey, E Eslick, K Willowson, J Dutta
Quantitative PET in the 2020s: a roadmap
PHYSICS IN MEDICINE AND BIOLOGY 66 (2021)

D Van Weehaeghe, S Babu, J De Vocht, N Zurcher, S Chew, C Tseng, M Loggia, M Koole, A Rezaei, G Schramm, P Van Damme, J Hooker, K Van Laere, N Atassi
Moving Toward Multicenter Therapeutic Trials in Amyotrophic Lateral Sclerosis: Feasibility of Data Pooling Using Different Translocator Protein PET Radioligands
JOURNAL OF NUCLEAR MEDICINE 61:1621–1627 (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 47:2681–2690 (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 (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 (2020)

X Tang, E Jafargholi Rangraz, W Coudyzer, J Bertels, D Robben, G Schramm, W Deckers, G Maleux, K Baete, C Verslype, M Gooding, C Deroose, J Nuyts
Whole liver segmentation based on deep learning and manual adjustment for clinical use in SIRT
EUROPEAN JOURNAL OF NUCLEAR MEDICINE AND MOLECULAR IMAGING 47:2742–2752 (2020)

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 Trans Med Imaging 39:952–963 (2020)

G Poma, F Garibaldi, F Giuliani, T Insero, M Lucentini, A Marcucci, P Musico, J Nuyts, F Santavenere, G Schramm, C Sutera, E Cisbani
Limited Angle Tomography reconstruction for non-standard MBI system by means of parallel-hole and pinhole optics
JOURNAL OF INSTRUMENTATION 15 (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, A Chiò, M Pagani, D Stam, H Van Esch, N Lamaire, M Verhaegen, N Mertens, K Poesen, L van den Berg, M van Es, R Vandenberghe, M Vandenbulcke, J Van den Stock, M Koole, P Dupont, K Van Laere, P Van Damme
Use of Multimodal Imaging and Clinical Biomarkers in Presymptomatic Carriers of C9orf72 Repeat Expansion
Jama Neurology 77:1008–1017 (2020)

R Boudewijns, H Thibaut, S Kaptein, R Li, V Vergote, L Seldeslachts, J Van Weyenbergh, C De Keyzer, L Bervoets, S Sharma, L Liesenborghs, J Ma, S Jansen, D Van Looveren, T Vercruysse, X Wang, D Jochmans, E Martens, K Roose, D De Vlieger, B Schepens, T Van Buyten, S Jacobs, Y Liu, J MARTI CARRERAS, B Vanmechelen, T Wawina, L Delang, J Rocha-Pereira, L Coelmont, J Chiu, P Leyssen, E Heylen, D Schols, L Wang, L Close, J Matthijnssens, M Van Ranst, V Compernolle, G Schramm, K Van Laere, X Saelens, N Callewaert, G Opdenakker, P Maes, B Weynand, C Cawthorne, G Vande Velde, Z Wang, J Neyts, K Dallmeier
STAT2 signaling restricts viral dissemination but drives severe pneumonia in SARS-CoV-2 infected hamsters
Nature Communications 11:5838–5838 (2020)

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)

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 (2019)

G Degtiarova, P Claus, J Duchenne, M Cvijic, G Schramm, J Nuyts, J Voigt, O Gheysens
Low septal to lateral wall F-18-FDG ratio is highly associated with mechanical dyssynchrony in non-ischemic CRT candidates
EJNMMI RESEARCH 9 (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 28:1730–1739 (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 42:126–132 (2017)

R Wodtke, G Schramm, J Pietzsch, M Pietsch, R Loeser
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, Z Kis, T Koegler, C Lorenz, K Schmidt, L Szentmiklosi, A Wagner, J Weil
Role of electric and magnetic dipole strength functions in the Cd-114(gamma,gamma ') and Cd-113(n,gamma.) reactions
Physical Review C 93:0143011 (2016)

J Maus, G Schramm, F Hofheinz, L Oehme, A Lougovski, J Petr, I Platzek, B Beuthien-Baumann, J Steinbach, J Kotzerke, J van den Hoff
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 and Biology 60:4209–4224 (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 4:1–14 (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)

I Platzek, B Beuthien-Baumann, M Schneider, V Gudziol, H Kitzler, J Maus, G Schramm, M Popp, M Laniado, J Kotzerke, J van den Hoff
FDG PET/MR for lymph node staging in head and neck cancer
European Journal of Radiology 83:1163–1168 (2014)

J Maus, F Hofheinz, G Schramm, L Oehme, B Beuthien-Baumann, M Lukas, R Buchert, J Steinbach, J Kotzerke, J van den Hoff
Evaluation of PET quantification accuracy in vivo Comparison of measured FDG concentration in the bladder with urine samples
Nuclear-Medizin 53:67–77 (2014)

R Massarczyk, R Schwengner, F Doenau, S Frauendorf, M Anders, D Bemmerer, R Beyer, C Bhatia, E Birgersson, M Butterling, Z Elekes, A Ferrari, M Gooden, R Hannaske, A Junghans, M Kempe, J Kelley, T Koegler, A Matic, M Menzel, S Mueller, T Reinhardt, M Roeder, G Rusev, K Schilling, K Schmidt, G Schramm, A Tonchev, W Tornow, A Wagner
Nuclear Deformation and Neutron Excess as Competing Effects for Dipole Strength in the Pygmy Region
Physical Review Letters 112:0725011–0725015 (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 and Biology 59:561–577 (2014)

I Apostolova, J Rogasch, R Buchert, H Wertzel, H Achenbach, J Schreiber, S Riedel, C Furth, A Lougovski, G Schramm, F Hofheinz, H Amthauer, I Steffen
Quantitative assessment of the asphericity of pretherapeutic FDG uptake as an independent predictor of outcome in NSCLC
BMC CANCER 14 (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 3:77–84 (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 F-18-FDG PET
EJNMMI Research 3:16–26 (2013)

I Platzek, B Beuthien-Baumann, M Schneider, V Gudziol, J Langner, G Schramm, M Laniado, J Kotzerke, J van den Hoff
PET/MRI in head and neck cancer: initial experience
European Journal of Nuclear Medicine and Molecular Imaging 40:6–11 (2013)

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 (2013)

R Massarczyk, G Schramm, A Junghans, R Schwengner, M Anders, T Belgya, R Beyer, E Birgersson, A Ferrari, E Grosse, R Hannaske, Z Kis, T Koegler, K Kosev, M Marta, L Szentmiklosi, A Wagner, J Weil
Electromagnetic dipole strength up to the neutron separation energy from Pt-196(gamma, gamma ') and Pt-195(n, gamma) reactions
Physical Review C 87:0443061–0443069 (2013)

R Hannaske, Z Elekes, R Beyer, A Junghans, D Bemmerer, E Birgersson, A Ferrari, E Grosse, M Kempe, T Kögler, M Marta, R Massarczyk, A Matic, G Schramm, R Schwengner, A Wagner
Neutron total cross section measurements of gold and tantalum at the nELBE photoneutron source
European Physical Journal A 49:1–11 (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 Biology, Physics and Medicine 26:49–55 (2012)

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 (2012)

R Massarczyk, R Schwengner, F Doenau, E Litvinova, G Rusev, R Beyer, R Hannaske, A Junghans, M Kempe, J Kelley, T Koegler, K Kosev, E Kwan, M Marta, A Matic, C Nair, R Raut, K Schilling, G Schramm, D Stach, A Tonchev, W Tornow, E Trompler, A Wagner, D Yakorev
Electromagnetic dipole strength of Ba-136 below the neutron separation energy
Physical Review C 86:0143191–01431913 (2012)

B Beuthien-Baumann, I Platzek, I Lauterbach, J van den Hoff, G Schramm, K Zoephel, M Laniado, J Kotzerke
Improved anatomic visualization of a glomus caroticum tumour within the carotic bifurcation with combined Ga-68-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, Nuclear Physics 20:431–442 (2011)