

University Medical Center Groningen
University of Groningen
Curriculum vitae

A. GENERAL INFORMATION

1. Name: **Stefan Both, PhD, DABR. FAAPM**
2. Office address, telephone, fax:
3. Cell phone:
4. Beeper:
5. Email:
6. Citizenships:

B. EDUCATIONAL BACKGROUND

<u>Degree</u>	<u>Institution name and location</u>	<u>Date Attended</u>	<u>Date Awarded</u>
BS/MS	Babes-Bolyai University, Cluj-Napoca, Romania, EU (Physics)	10/1990-09/1995	09/1995
Ph.D	Babes-Bolyai University, Cluj-Napoca, Romania, EU (Physics)	10/1998-08/2005	08/ 2005

C. PROFESSIONAL POSITIONS AND EMPLOYMENT

1. Post-graduate training (include residency/fellowships)

<u>Title</u>	<u>Institution name and location</u>	<u>Dates held</u>
Medical Use of Radioactive Materials	University of Bucharest, Romania, EU	09/1996-09/1997
Leadership and Management	University of Pennsylvania, Wharton School Business Aresty Institute of Executive Education Philadelphia, PA, USA	2013-2014

2. Academic positions (teaching and research)

<u>Title</u>	<u>Institution name and location</u>	<u>Dates held</u>
Adjunct Lecturer in Physics	Babes-Bolyai University, Cluj-Napoca, Romania, EU	10/1998-01/2000
Assistant Professor of Clinical Radiation Oncology	University of Pennsylvania School of Medicine Philadelphia, PA, USA	07/2008-06/2011
Assistant Professor of	Hospital of the University of Pennsylvania,	07/2011-09/2015

Radiation Oncology	University of Pennsylvania School of Medicine Philadelphia, PA	
Associate Attending	Memorial Sloan- Kettering Cancer Center New York, NY	09/2015-09/2017
Professor	Groningen University Medical School	09/2017-present

3. Hospital positions (e.g., attending physician)

<u>Title</u>	<u>Institution name and location</u>	<u>Dates held</u>
Jr. Medical Physicist	Oncological Institute, Cluj-Napoca, Romania, EU	04/1996-03/1997
Medical Physicist	Oncological Institute, Cluj-Napoca, Romania, EU	04/1997-01/2000
Director of Medical Physics	Oncological Institute, Cluj-Napoca, Romania, EU	04/1998-01/2000
Jr. Medical Physicist	Pennsylvania Radiation Oncology Physics Associates Ltd., Hershey, PA, USA	02/2000-03/2001
Medical Physicist	York Cancer Center, Wellspan Health, York, PA, USA	04/2001-02/2005
Medical Physicist	Department of Radiation Oncology, University of Pennsylvania School of Medicine Philadelphia, PA, USA	08/2005-09/2015
Medical Physics Residency Director	Department of Radiation Oncology, University of Pennsylvania School of Medicine Philadelphia, PA, USA	07/2007-06/2015
Director of Translational Physics Research	Department of Radiation Oncology University of Pennsylvania School of Medicine Philadelphia, PA, USA	07/2010-09/2015
Lead Medical Physicist	Memorial Sloan- Kettering Cancer Center New York, NY, USA	09/2015-08/2017
Head of Medical Physics	University Medical Center Groningen University of Groningen, NL	09/2017-present
Scientific Leader	Particle Therapy Research Center University Medical Center Groningen University of Groningen, NL	09/2020-present

4. Other Employment

<u>Title</u>	<u>Institution name and location</u>	<u>Dates held</u>
Medical Physics Consultant	AROS, Colleyville, TX, USA	03/2005-05/2005
Member, Board of Directors	Education, Research and Health International, TX, USA	08/2007-12/2009

D. LICENSURE, BOARD CERTIFICATION, MALPRACTICE

Licensure

<u>State</u>	<u>Number</u>	<u>Date of issue</u>	<u>Date of last registration</u>
National Nuclear Regulatory Commission, Romania, EU	N/A	1997	2000
US Nuclear Regulatory Commission		2003	2015
New York State License	000282-1	2005	2016-present
Dutch Ministry of Health License Radiotherapy		2018	2018-present

2. Board Certification

<u>Full Name of Board</u>	<u>Certificate #</u>	<u>Date</u>
American Board of Radiology Radiological Physics	P2796	Since 2003; Renewed 2013-Therapeutic

E. PROFESSIONAL MEMBERSHIPS (medical and scientific societies)

<u>Member/officer</u>	<u>Name of Organization</u>	<u>Dates held</u>
Physicist Coordinator	National Program for the International Atomic Energy Agency	1997-1998
Member	Romanian Society for Medical Physics	1997-2002
Physicist Coordinator	Thermoluminescence Dosimetry (TLD) Inter-comparison for High Energy Electron Beams) EUROPAQ Program, Leuven University, Belgium, EU	1998-2000
Committee Member	World Bank Multiple User Research Center Project, Cluj-Napoca, Romania, EU	1999
Member	European Society for Therapeutic Radiation Oncology	2000-present
Member	Romanian Society for Radiation Therapy and Oncology	2008-present
Member	Radiation Research	2010-2015
Member	Focus Group MR guided Proton Therapy, Ion Beam Applications, Belgium, EU	2014-2015
Member	American Association of Physicists in Medicine	2001-present
Member	American Society for Therapeutic Radiology and Oncology	2009-present
Reviewer	ECRI Institute; U.S. Agency for Healthcare Research and Quality (AHRQ) First National Healthcare Horizon Scanning System.	2009-present

Member	Education Committee / Summer School Subcommittee, American Association of Physicist in Medicine, College Park, MD	2009-2012
Site Review Member	Commission on Accreditation of Medical Physics Educational Programs (CAMPEP), Residency Education Review Committee, College Park, MD	2010-present
Item Writer	Question Writer Committee, Therapy Physics – Maintenance of Certification Examination, American Board of Radiology, Tucson, AZ	2010-2015
Item Writer	Question Writer Committee, Therapy Physics Part II, American Board of Radiology, Tucson, AZ	2010-2015
Member	Medical Physics Residency Training and Promotion Subcommittee, American Association of Physicist in Medicine, College Park, MD	2011-2015
Examiner	Oral Examination Committee, Therapeutic Radiologic Physics American Board of Radiology, Tucson, AZ	2011-present
Invited Expert	Department of Energy Office and National Cancer Institute Ion Beam Therapy Workshop, Bethesda, MD	2012-2013
Reviewer	Massachusetts General Hospital/ Harvard Medical School Federal Share Proton Research Grant, National Institute of Health	2012-2015
Voting Member	Commission on Accreditation of Medical Physics Educational Programs (CAMPEP), Residency Education Review Committee, College Park, MD	2013-present
Consultant	Work Group on Periodic Review of Medical Physics Residency Training, American Association of Physicist in Medicine	2013-2015
Member	Work Group on Periodic Review of Medical Physics Residency Training, American Association of Physicist in Medicine	2015-2018
Member	Joint Work Group For Research Seed Funding Initiative, American Association of Physicist in Medicine	2014-2016
Member	Work Group on Funding Options for Medical Physics Residency Programs, American Association of Physicist in Medicine	2014-2017
Panel Chair	Oral Examination Therapeutic Radiologic Physics, American Board of Radiology, Tucson, AZ	2014
Member	Imaging Subcommittee, Proton Therapy Co-operative Oncology Group	2016-2019
Co-chair	Imaging Subcommittee, Proton Therapy Co-operative Oncology Group	2019-present

Member	HN Subcommittee, Proton Therapy Co-operative Oncology Group	2016-present
Member	Thoracic Subcommittee, Proton Therapy Co-operative Oncology Group	2016-present
Reviewer	Medical Physics Residency Program , MSKCC, NYC, NY	2018
Member	European Proton Therapy Network((EPTN5), ESTRO	2018-present
Chair	LET Group/ EPTN5, ESTRO	2019-present
Reviewer	Research Grant Review Committee- American Israeli Foundation	2018
Reviewer	Research Grant Review Committee - Leuven University, Belgium	2018- present
Reviewer	Research Grant Review Committee- Cancer Research UK(CRUK)	2019-present
Reviewer	Research Grant Review Committee- European Union Commission	2020-present
Reviewer	Research Grant Review Committee- Norway Science Foundation	2021-present
Member	Proton Arc Consortium- Ion Beam Applications, BL	2021-present
Member	Proton Flash Consortium- Ion Beam Applications, BL	2022-present
Executive Co-chair	Imaging Subcommittee, Proton Therapy Co-operative Oncology Group	2022-present
Reviewer	Research Grant Review Committee- Swiss Science Foundation	2022-present
Reviewer	Scientific Program PTCOG	2023-present

Academic and Institutional Committees:

Member	Student Thesis Advisory Committee, Graduate Medical Physics and Biophysics Program of the Physics Department, Babes Bolyai University, Cluj-Napoca, Romania, EU	1996-2000
Chair	Education Review Committee, Medical Physics Residency Program, Dept. of Radiation Oncology Hospital of the University of Pennsylvania (HUP)	2007-2015
Chair	Medical Physics Residency Program Admission Committee, HUP	2007-2015
Chair	Oral Examination Committee of Medical Physics Residency Program, HUP	2007-2015
Chair	Physics Educational Task Force, Hospital of the University of Pennsylvania (HUP),	2008-2011

	Dept. of Radiation Oncology	
Member	Clinical Excellence and Quality Improvement Committee, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2008-2009
Member	Proton Planning and Treatment Flow Committee, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2009-2011
Member	Proton Medical Physics Effort Group, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2009-2011
Member	Proton Priority Working Group, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2009-2015
Member	Policy and Procedures Review Committee, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2009-2015
Member	Proton Priority Working Group, The Children's Hospital of Philadelphia (CHOP)	2010-2015
Chair	Medical Physics Residency Program Curriculum Review Committee, HUP	2012
Member	Strategic Work Group- HUP Network	2012-2015
Member	Vice Chair of Medical Physics Search Committee, HUP	2012-2013
Member	Radiation Oncology Residency Interview Committee, HUP	2012-2015
Member	Radiation Oncology Clinical Protocol Review Committee, HUP	2012-2015
Member	Radiation Oncology Education Committee, HUP	2012-2015
Member	Radiation Oncology Website Committee, HUP	2012-2015
Member	Open Expression Committee, University of Pennsylvania	2012-2015
Reviewer	Scientific Program Committee, American Association of Physicists in Medicine Annual Meeting	2013-present
Interviewer	Penn Medical Student Admission, Perelman School of Medicine	2014-2015
Member	Imaging Selection Committee, New York Proton Center	2015- 2016
Member	Clinical Workflow Committee, New York Proton Center	2015- 2017
Member	All Campus Medical Physics Review, Department of Medical Physics, Memorial Sloan Kettering Cancer Center	2015-2017
Member	All Campus Dosimetry QA Committee, Department of Medical Physics, Memorial Sloan Kettering Cancer Center	2015-2017
Member	Board, Department of Radiation Oncology,	2017-present

	University Medical Center Groningen.	
Promoter	PhD Program, University of Groningen	2017-present
Thesis Advisor	MSc Bioengineering , University of Groningen	2018-present
PhD Committee Member	PhD Thesis assessment, NL, DK	2018-present
PhD Examiner	PhD Defense Ceremony, NL, DK, AU	2018-present
Principal Investigator	Imaging Institute, University Medical Center Groningen	2018-present
Chair	Exploratory Committee, University of Groningen	2018-2019
Chair	Scientific Board, UMCG- Particle Therapy Research Center	2020-present
Member	Management Team, UMCG- Particle therapy Research Center	2020-present
Member	Board of Examiners, Bioengineering Bachelor Program University of Groningen	2022-present

F. HONORS AND AWARDS

<u>Name of award</u>	<u>Date awarded</u>
National Merit Scholarship, Ministry of Education, Romania, EU	1991-1995
International Atomic Energy Agency (IAEA) Travel Award, Vienna, Austria, EU	1997
Hungarian Transylvanian Foundation/The Hungarian Ministry of Education Award, EU	1998
U.S. Visiting Scholar, International Organization of Medical Physics/ American Association of Physicists in Medicine (IOMP/AAPM)	1999
International Atomic Energy Agency (IAEA) Travel Award, Vienna, Austria, EU	2000
European Society for Therapeutic Radiation Oncology Membership Award	2000
Wellspan Health System "Celebration of Quality Forum" Award, York, PA,USA	2004
Founding Member of the Society of Medical Physics, Academic Programs Directors, USA	2000
Medical Physics Teaching Award, University of Pennsylvania, Philadelphia, PA	2011
IBA Travel Grant	2012, 2013
American Board of Radiology Volunteer Service Award	2014
Fellow of the American Association of Physicists in Medicine	2017
Extraordinary Member of the Dutch Medical Physics Society	2018-present
Chair, International Student Congress of (bio)Medical Sciences(ISCOMS)	2018
Chair, Workshop Positive Energy, ISCOMS	2018-present

Advisor, Ion Beam Application/ University Catholic Leuven, Walloon Region Grant , BL, EU 2019

G. INSTITUTIONAL/HOSPITAL AFFILIATION

1. University of Groningen, University Medical Center Groningen, Groningen, NL, EU

H. EMPLOYMENT STATUS

1. Name of Current Employer(s): University Medical Center Groningen, Groningen, NL, EU

I. CURRENT AND PAST INSTITUTIONAL RESPONSIBILITIES AND PERCENT EFFORT

Major Academic and Clinical Teaching Responsibilities:

Thesis Coordinator to Master of Science Students in the Medical Physics Program, 1999 Babes-Bolyai University, Cluj-Napoca, Romania, EU	1996-
Course Lecturer, Radiation Therapy Physics, Babes-Bolyai University, Cluj-Napoca, Romania, EU	1998-2000
Program Coordinator, The Dept. of Radiation Oncology, Oncological Institute, Cluj-Napoca, Romania, EU	1998-1999
Medical Physics Teaching, Dept. of Radiation Oncology, York Cancer Center, York, PA, USA	2001-2005
Radiation Oncology Physics Elective Residency Rotation with Radiation Oncology Residents, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology, Philadelphia, PA, USA	2005-2015
Train and Educate Radiation Oncology Residents in Clinical Physics, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2005-2015
Co-authored Lecture, "Oral Tongue Squamous Cell Carcinoma in Young Patients," Comprehensive Lecture in Medical and Radiation Oncology, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2006
Co-authored Lecture, "Concurrent Chemoradiation for Head and Neck Cancer," Comprehensive lecture in Medical and Radiation Oncology, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2006
Co-authored Lecture, "Adenosquamous Carcinoma of the Anus," Comprehensive lecture in Medical and Radiation Oncology, Hospital of the University of	2006

Pennsylvania, Dept. of Radiation Oncology

Train and Educate Students in Radiation Oncology Physics, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2006-2015
Co-authored Lecture "Altered Fractionated Radiation Therapy. What Have We Learned?" Comprehensive Lecture in Radiation Oncology, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2007
Train and Educate Medical Physics Residents in Radiation Oncology Physics, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2007-2015
Lecturer, Penn Medical Physics Course for Medical Residents, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2008-2015
Instructor, Proton Therapy Workshop, Hospital of the University of Pennsylvania, Dept. of Radiation Oncology	2009
Uncertainties in Proton Therapy, Comprehensive Lecture in Radiation Oncology, Hospital of the University of Pennsylvania (HUP), Dept. of Radiation Oncology	2009
Proton Therapy Treatment Planning - GU; Hospital of the University of Pennsylvania, Dept. of Radiation Oncology	2009
Medical Physics Independent Study, School of Arts & Sciences, University of Pennsylvania, Master of Medical Physics	2009-2015
Implement and Coordinate Radiation & Oncology Practicum for Graduate Students, School of Arts & Sciences, University of Pennsylvania, Master of Medical Physics, Hospital of the University of Pennsylvania, Pennsylvania Hospital	2009-2015
Instructor of Proton Treatment Planning for Staff & Faculty, Radiation Oncology Dept., Hospital of the University of Pennsylvania, Pennsylvania Hospital	2009
From Photon to Proton Therapy - International Commission on Radiation Units and Measurements (ICRU), Reports:50, 62 & 78, Hospital of the University of Pennsylvania, Dept. of Radiation Oncology	2010
Update on Proton Treatment Planning Program Development and Implementation at Penn	2011
Lung Proton Treatment Planning	2011
Proton Therapy: Development, Diffusion and impact on US job and healthcare markets - Independent Study, Wharton School of Business, University of Pennsylvania	2011
Proton Training- USA Department of Defense	2011-2015
Lead Physics Faculty, Proton Treatment Planning Teaching and Review Meeting	2011-2013
Topics in Proton Therapy Treatment Planning- Lecture, Medical Physics Residence	2012

Pediatric Proton Therapy, Part I&II- Lecture, Radiation Oncology Residents	2012
Worldwide Disparities in Proton Therapy- School of Arts and Sciences, University of Pennsylvania	2012
"Proton Project Development Retreat- Physics Research", Department of Radiation Oncology, University of Pennsylvania, Philadelphia, PA	2012
"Scanning the Horizons of Prostate Radiotherapy: From Photons to Protons", Penn Imaging and Radiobiology Program, Abramson Cancer Center, Philadelphia	2012
Proton Therapy: Treatment planning challenges, Radiation Safety and Regulatory Meeting, University of Pennsylvania	2012
Proton Treatment Planning Workshop, Skandion Clinic, Uppsala, Sweden	2012
Preparing to apply for a CAMPEP approved Medical Physics Residency, MMP Program, University of Pennsylvania, Master of Medical Physics	2013
Proton Technologies Implementation for Prostate Radiotherapy. Lecture- Medical Physics Residency, Philadelphia, PA, USA	2014
"Pencil Beam Scanning Technology", Penn Radiation Therapist Meeting, Abramson Cancer Center, Philadelphia, PA, USA	2014
Essentials in preparing to apply for a CAMPEP approved Medical Physics Residency, MMP Program, University of Pennsylvania, Master of Medical Physics, Philadelphia, PA	2014
MMP 506, MMP Program, University of Pennsylvania, Master of Medical Physics	2014-2015
Proton Pencil Beam Scanning, Grand Rounds, Department of Radiation Oncology, Memorial Sloan-Kettering Cancer Center, New York, NY	2015
Medical Physics Resident Education, Radiotherapy Department, UMCG	2017-present
Radiation Oncology Resident Education , Radiotherapy Department, UMCG	2017-present
PhD Promoter, University of Groningen, Groningen, NL	2018-present
University College of Groningen Oncology Course	2018-2022
Student Thesis Coordinator, MSc Bioengineering , University of Groningen, Groningen, NL	2020-present
Member, Board of Exams, Bioengineering Bachelor, University of Groningen, Groningen, NL	2022-present

J. RESEARCH SUPPORT

Current:

4D- Elekta/ Public Private Partnership Grant, Fraction-wise retrospective 4D photon dose reconstruction and accumulation, 2022-2025, (Role: PL/PI), € 355.000

FLASH- IBA/Public Private Partnership Grant, Towards Mammary FLASH PT, 2022-2025 (Role: PL/PI), €1.085.000

RIVER- Real-time in Vivo Verification of Proton Therapy Grant- Dutch Cancer Society -2021-2025. (Role: PI), € 553.730

RAPTOR – EU Marie Curie Grant- Real-Time Adaptive Particle Therapy of Cancer (RAPTOR) project (EU-project 955956 – RAPTOR).- 2020-2024 (Role: PI), € 3.967.111 / UMCG-part: € 531.240

SMART Proton Therapy Clinic/SPARC- IBA/Public Private Partnership grant 2019-2023 (Role Co-PL), €425.000

INCONTROL - Clinical Control Infrastructure for Proton Therapy Treatments Grant - Dutch Cancer Society - 2018-2022 (Role :PI, PL), € 528.856

IMPACT- IMage guided Proton/pArticle infrastructure for preClinical sTudies- Dutch Cancer Society –2018-2024 (Role: PI), € 2.817.202

UMCG - Proton Therapy Chair Fund- 2017- Present, (Role: PI, PL) €400.000

Past:

Defining Pencil Beam Scanning Technical Protocols, IBA Ltd., Leuven, Belgium., 3/2013-6/2015 (Stefan Both, PI), \$160,000/annual direct costs, 10% effort (Role in grant: PI)

Proton Therapy Dose Characterization and Verification, Department of Defense, W81XWH-09-2-0174 , 10/2012-9/2015 (Zelig Tochner, PI), \$75,000/annual direct costs (Role in grant: Co-Investigator)

Image Guided and Adaptive Proton Therapy, Department of Defense, 04-225-0712, 9/2010-9/2012 (Zelig Tochner, PI), \$35,000/annual direct costs, 25% effort (Role in grant: Co-Investigator)

Radiodyne Educational Grant, 9/2009-9/2010 (PI, PI), \$10,000/annual direct costs (Role in grant: PI)

K. EXTRAMURAL PROFESSIONAL RESPONSIBILITIES

Editorial Positions:

International Editorial Board	Journal of Radiotherapy & Medical Oncology (JRSRMO)	2008-2015
Ad-hoc Reviewer	Radiotherapy & Oncology	2008-present

Ad-hoc Reviewer	Applied Journal of Clinical Medical Physics	2008-present
Ad-hoc Reviewer	Medical Dosimetry	2009-present
Ad-hoc Reviewer	Medical Physics Journal	2010-present
Ad-hoc Reviewer	International Journal of Radiation Oncology Biology Physics	2011-present
Guest Associate Editor	Medical Physics Journal	2012
Editorial Board Member	Journal of Translational Cancer Research	2012-present

Lectures by Invitation:

"Optimization of Dosimetry for Rhynopharyngeal Cancers," Annual Congress of Medical Physics Romanian Association, Galati, Romania, EU	1998
"Increasing Effectiveness in Prostate EBT Using Ultrasound Localization." New and Future Developments in Radiotherapy, 6th Annual International Conference and Workshop Sponsored by Wayne State Medical School, Las Vegas, NV	2001
"Mammosite-Methods of Clinical Implementation" New and Future Developments in Radiotherapy, 9th Annual International Conference and Workshop Sponsored by Wayne State Medical School, San Diego, CA	2004
"Oral Tongue Cancer in Young Patients." Coauthor, Workshop, Cluj-Napoca, Romania, EU	2007
"Mitigating Toxicity Associated with Treatment of Head and Neck Cancer." Coauthor, Workshop, Oncological Institute, Cluj-Napoca, Romania, EU	2007
"Prostate IMRT in the 4D Era." Romanian Radiotherapy and Oncological Society Conference, Cluj-Napoca, Romania, EU	2007
"Head and Neck IMRT Planning." Workshop, Oncological Institute, Cluj-Napoca, Romania, EU	2007
"IMRT for Head and Neck." Workshop, Dallas-Ft. Worth, TX	2007
"Medical Physics at UPENN." Montreal General Hospital, Dept. of Medical Physics, McGill University, Montreal, Canada	2008
"The Role of Image Guided Radiation Therapy." Workshop, Dallas-Ft. Worth, TX	2009
"Uncertainties in Prostate, Head, Neck and Brain Radiotherapy. Queen Elizabeth Hospital,	2010

Hong Kong, From Photons to Protons." Hong Kong Medical Physicists Association	2010
"Prostate Radiotherapy. Balloons, Markers, Beacons and Beams." Massachusetts General Hospital (MGH), Dept. of Radiation Oncology, Harvard Medical School	2010
"Clinical Implementation of Proton Therapy", Montreal General Hospital, McGill University, Canada	2011
"Positioning, Immobilization, Localization and Imaging", 50 Particle Therapy Co-Operative Group International Conference, Philadelphia, PA	2011
"Prostate radiotherapy. Treatment planning and delivery strategies." Gray Institute for Radiation Oncology& Biology, Oxford University, UK	2011
"Frontiers in Proton Prostate Radiation Therapy", Babes Bolyai University, Cluj-Napoca, Romania, EU	2011
"Proton Therapy Treatment Planning: From Physics to Clinical Reality" Clinical Spring Meeting, American Association of Physicists in Medicine, Dallas, Texas	2012
"A method to preserve the integrity of the pencil beam spot size during proton Scanning brain tumor irradiation", IBA User Meeting, Dresden, Germany, EU	2012
New Techniques in intrafraction target motion management (DIBH), Fourth Annual Patient Positioning Symposium, New Orleans, US	2012
Proton Therapy Treatment Planning, American Association of Physicists in Medicine Annual Meeting, Charlotte, NC	2012
"Proton Treatment Planning and Delivery Issues", Varian/Penn Research Retreat, Chicago, IL	2012
Pencil Beam Scanning Treatment Planning, Skandion Clinic, Uppsala, Sweden	2012
Proton Treatment Planning, American Association of Physicists in Medicine Great Lake Chapter Meeting, Flint, Michigan	2012
Defining New Methods to Treat with Pencil Beam Scanning, IBA Users Meeting, Chicago, IL	2013
Pencil Beam Scanning Proton Therapy Technical Developments & Expanding Clinical Indications, National Taiwan University, Taipei, Taiwan	2013
Pencil Beam Scanning Proton Therapy Physics & Expanding Clinical Indications, Taipei Medical University, Taipei, Taiwan.	2013
Challenges in Pencil Beam Scanning Clinical Deployment, Stanford University, Stanford, CA	2013

Challenges in Proton Pencil Beam Scanning Clinical Deployment. Philadelphia Roentgen Ray Society Radiation Oncology	2014
Challenges in Pencil Beam Scanning Clinical Deployment: Problems and Solutions, Taipei Medical Physicists' Meeting, Taipei, Taiwan	2014
Challenges in Pencil Beam Scanning Clinical Deployment: Problems and Solutions, Southern Taiwan Medical Physicists' Meeting, Kaohsiung/Tainan, Taiwan.	2014
Scanning Beams. 53rd Annual Conference of the Particle Therapy Co-operative Group, Shanghai, China.	2014
Physician Workforce Diversity in Radiation Oncology, Diagnostic Radiology, and Beyond, Coauthor, Leslie Alexander, M.D. Memorial Lecture, National Medical Association, Honolulu, Hawaii.	2014
Challenges in Pencil Beam Scanning Clinical Implementation, Memorial-Sloan Kettering, NY, NY	2014
Challenges in Pencil Beam Scanning Clinical Implementation, UT Southwestern, Dallas, TX	2014
Motion Management for Proton Therapy, Penn/IBA Inaugural Course on Proton Therapy, Perelman School of Medicine, Philadelphia, PA	2014
An Introduction to Treatment Planning, Lead Author, Penn/IBA Inaugural Course on Proton Therapy, Perelman School of Medicine, Philadelphia, PA.	2014
Positioning, Immobilization and Verification, Penn/IBA Inaugural Course on Proton Therapy, Perelman School of Medicine, Philadelphia, PA	2014
Scanning Beams. 54th Annual Conference of the Particle Therapy Co-operative Group, PTCOG54, San Diego, US.	2015
Self-Funding a Residency, 57th Annual Meeting, American Association of Physicists in Medicine Anaheim, CA	2015
PBS Physics and Clinical Realities: Mind the Gap, 3rd CRUK/MRC Oxford Institute for Radiation Oncology Symposium, Oxford, UK	2015
Pencil Beam Scanning Clinical Deployment: Problems and Solutions, University College of London Proton Therapy Symposium, London, UK	2015
Positioning, Immobilization and Verification, Penn/IBA Inaugural Course on Proton Therapy, Perelman School of Medicine, Philadelphia, PA	2015
An Introduction to Treatment Planning, Lead Author, Penn/IBA Course on Proton Therapy, Perelman School of Medicine, Philadelphia, PA	2015

Motion Management for Proton Therapy, Penn/IBA Inaugural Course on Proton Therapy, Perelman School of Medicine, Philadelphia, PA	2015
CBCT for Adaptive Proton Therapy, ESTRO35, Turin, Italy	2016
Scanning Beams. 55th Annual Conference of the Particle Therapy Co-operative Group, Prague, Czech Republic.	2016
Scanning Beams: The New Standard in Proton Therapy, RAMPS Symposium, New York, NY.	2016
In pursuit of Motion..., Massachusetts General Hospital, Boston, MA	2016
Pencil Beam Scanning: Challenges and Solutions, NCCS, Singapore, SP	2016
Challenges in Prostate Proton Planning, MSKCC Prostate Radiotherapy Symposium, New York, New York	2016
Proton Therapy, Vision 20/20, University Medical Center Groningen, Groningen, NL	2017
IMPT in Prostate Cancer, Opening Symposium Proton Therapy @ Groningen, NL	2018
The Physics point of view, Opening Symposium Proton Therapy @ Groningen, NL	2018
Lymphoma Pencil Beam Scanning: New and Future Developments, Groningen, NL	2018
Towards a SMART Proton Pencil Beam Scanning Clinic , IBA/ESTRO , Barcelona, SP	2018
Positive energy in cancer treatment, International Student Congress of (bio) Medical Sciences Groningen, NL	2018
Mediastinal Lymphoma: Immobilization, Motion Management & Treatment Planning from Passive Scatter to Multifield Optimization with PBS	2018
Ahead of the Future..., University of Groningen, Groningen, NL	2019
Pencil Beam Scanning: The ultimate standard in Proton Therapy? NVKF Conference, Woudschoten, NL	2019
Automated Patient QA and Adaptive Therapy: Present and Future In the Model Based Clinic, IBA/AAPM , San Antonio, TX, USA	2019
SMART Proton Pencil Beam Clinic, University of Miami, Miami, FL, USA	2019
Towards a SMART Radiotherapy Clinic, XX Medicalis Congress, "Iulius Hatieganu" Medical and Pharmacy School, Cluj-Napoca, Romania	2019

Positive energy in cancer treatment, International Student Congress of (bio) Medical Sciences Groningen, NL	2019
Smart IMPT Clinic: Present and Future Developments Innovative Technologies in Radiation Oncology Conference, Wollongong, Australia	2020
The Model Based Clinic: What's under the hood? Mini-Micro-Nano Dosimetry Conference, Wollongong, Australia	2020
The SMART Proton Clinic: New and Future Developments Clinical and Experimental Research in Radiation Oncology (CERRO), France	2020
Proton Therapy -Ahead of the Future. Princess Margaret Hospital, Toronto, Canada	2021
Did you ever have to face any Scientific Integrity issue?, RUG Workshop, NL	2021
Next Generation Advances in Proton Therapy Planning. Where are we heading 1st Apollo Proton Annual Practicum, India	2021
Clinical introduction of dynamic arc proton therapy. IBA Satellite Symposium during PTCOG	2021
Treatment Planning and Delivery for Proton Thoracic Therapy / A European Center's Experience, 63rd AAPM Annual Meeting	2021
Medical Physics Vision for Radiotherapy, Princess Margaret Hospital, Toronto	2022
Towards Adaptive Proton Therapy in the Model Based Clinic, Ground Rounds Johns Hopkins Medical School, Radiation Oncology Dept., Baltimore	2022
EU COST Multichem Workshop, Trends in Proton Therapy, March, Geneva	2022
Commissioning a Proton Facility, Refresher Course, European Congress of Medical Physics, 17-20 August, Dublin	2022
Model Base Approach in Proton Therapy, European Congress of Medical Physics, 17-20 August, Dublin	2022
Model Based Planning including Breast and Head and Neck Cancers, 3 rd John Hopkins Proton Conference " A learning Experience", September, Baltimore, USA	2022
High Precision Proton Therapy: Where are we?, New York Proton Center, July, New York City, USA	2022
Towards Proton Arc in the Model Based Clinic, ESTRO Physics Workshop, October, Lisbon, PT	2022
Automated Adaptive Proton Therapy Workflows, Mini-Micro-Nano Dosimetry Conference	2023

Noosa, Australia

Towards Automated Adaptive Proton Therapy, Memorial Sloan -Kettering Cancer Center, 2023
Ground Rounds, Medical Physics Department, New York, NY, USA

Organizing Roles in Scientific Meetings:

Co- Director and Local Organizer: "The Physics of Radiation Therapy." 1999
European Summer School, American Association of Physicists in Medicine
(AAPM)/International Organization of Medical Physics (IOMP)
Cluj-Napoca, Romania, EU

Organizing Committee Member for the 9th Annual Meeting, "New and Future 2004
Developments in Radiation Therapy." Wayne State University, San Diego, CA

Co-organizer, Proton Therapy Workshop, Hospital of the University of Pennsylvania (HUP), 2009
Dept. of Radiation Oncology

Chair, Local Arrangements Committee (LAC), American Association of Physicist 2010
Medicine (AAPM) Summer School, "Become a Better Teacher of Medical Physics."
Philadelphia, PA

Moderator, Resident Panel, American Association of Physicist in Medicine (AAPM) 2010
Summer School: "Become a Better Teacher of Medical Physics." Philadelphia, PA

Moderator, Treatment Planning Scientific Session, Particle Therapy Co-Operative 2011
Group 50, PTCOG50, International Meeting. Philadelphia, PA

Core Organizing Committee Member, Particle Therapy Co-Operative Group (PTCOG) 50, 2011
International Meeting. Philadelphia, PA

Co-Organizer Department of Defense Treatment Planning Training for Physicists 2012
and Physicians at Roberts Proton therapy Center, Hospital of the University of Pennsylvania,
Philadelphia

Chair: Moving Target Session, Particle Therapy Co-Operative Group 53, PTCOG 53, 2014
International Meeting, Shanghai, China

Chair, Acceptance Testing and Commissioning Session, Particle Therapy 2014
Co-Operative Group 53, PTCOG 53, International Meeting. Shanghai, China

Moderator, Particle Therapy Dose Measurement and Scanning Beam Delivery Session, 2014
American Association of Physicists in Medicine 56th Annual Meeting, Austin, TX

Chair, Imaging in Radiotherapy Student Award, 3rd CRUK/MRC Oxford Institute for 2015
Radiation Oncology Symposium. Oxford, UK

Chair, Imaging in Radiotherapy Session, 3rd CRUK/MRC Oxford Institute for 2015
Radiation Oncology Symposium, Oxford, UK

Moderator Q&A Session, 2016 RAMPS Symposium, New Developments in 2016

Radiotherapy New York, NY

Award Committee Member, RAMPS Young Investigator, New York, NY	2016
Co-Organizer, High Precision, Innovation and healthy Ageing of Cancer Patients Proton Therapy Opening Symposium, Groningen, NL	2018
Chair, International Student Congress in (Bio) Medical Sciences, Groningen, NL	2018
Organizer, Proton Therapy Workshop International Student Congress of (bio)Medical Sciences Groningen, NL	2018
Host Organizer, Medical Imaging Symposium for PhD Students Groningen, NL	2019
Organizer, Proton Therapy Workshop - Positive Energy International Student Congress of (bio)Medical Sciences Groningen, NL	2019
Organizer, Proton Therapy Workshop-Positive Energy International Student Congress of (bio) Medical Sciences Groningen, NL	2022
Session Chair, Motion Impact, PTCOG 59, Miami, USA	2022
Contributor, Dutch AI Challenge: Synthesis CT for RT (SynthRAD)	2023

L. BIBLIOGRAPHY

1. Articles in professional peer-reviewed journals

1. **S Both**, A Ionut M, S Andrada R, A Marius, C Andrei, Hansen J M, A Rodica: A study to establish reasonable action limits for patient-specific quality assurance in intensity-modulated radiation therapy. Journal of Applied Clinical Medical Physics 8(2): 1-8, 2007.
2. Z Xiaodong, **S Both**, TC Zhu : Determination of correction factors for a 2D diode array device in MV photon beams. Medical Physics 36(2): 523-9, February 2009.
3. Bar Ad V, Cheville A, Solin LJ, Dutta P, **Both S**, Harris ER: Time course of mild arm lymphedema after breast conservation treatment for early-stage breast cancer. Int J Radiat Oncol Biol Phys. 76(1): 85-90, January 2010.
4. Bar Ad V, Weinstein G, Dutta PR, Chalian A, **Both S**, Quon H: Gabapentin for the treatment of pain related to radiation-induced mucositis in patients with head and neck tumors treated with intensity-modulated radiation therapy. Head & Neck 32(2): 173-7, February 2010.
5. Bar Ad V, Weinstein G, Dutta PR, Dosoretz A, Chalian A, **Both S**, Quon H: Gabapentin for the treatment of pain syndrome related to radiation-induced mucositis in patients with head and neck cancer treated with concurrent chemoradiotherapy. Cancer 116(17): 4206-13, September 2010.

6. Du KL, **Both S**, Friedberg JS, Rengan R, Hahn SM, Cengel KA: Extrapleural pneumonectomy, photodynamic therapy and intensity modulated radiation therapy for the treatment of malignant pleural mesothelioma. Cancer Biology & Therapy 10(5): 425-9, September 2010.
7. Deville C, **Both S**, H Wei-Ting, Tochner Z, Vapiwala N: Clinical Toxicities and Dosimetric Parameters After Whole-Pelvis Versus Prostate-Only Intensity-Modulated Radiation Therapy for Prostate Cancer. Int J Radiat Oncol Biol Phys. 78(3), November 2010. PMCID: 20171807
8. Tukral A, Metz J, Hwang WT, O'Dwyer P, Plastaras J, **Both S**, BarAd V: Toxicity data for preoperative concurrent chemoradiation with Oxaliplatin and continuous infusion 5-Fluorouacil for locally advanced esophageal cancer. Dis Esophagus. December 2010. PMCID: 21143694
9. **Both S**, Wang K, Bar Ad V, Plastaras J, Tochner Z, Vapiwala N: Real-time study of prostate intrafraction motion during external beam radiotherapy with daily endorectal balloon. Int J Radiat Oncol Biol Phys. 81(5): 1302-9, December 2011.
10. A Berman, **S Both**, MS. Ingram and L Lin: Dosimetric Comparison of Combined IMRT and Proton Therapy versus IMRT Alone for Pelvic and Para-aortic Radiotherapy in Gynecologic Malignancies. Int J Radiat Oncol Biol Phys. 82(3), March 2012 Notes: Corresponding Author. PMCID: 22177626
11. Deville C, Vapiwala N, Hwang W, Lin H, Bar Ad V, Tochner Z, **Both S**: Comparative Toxicity and Dosimetric Profile of Whole-Pelvis versus Prostate Bed-Only Intensity-Modulated Radiation Therapy after Prostatectomy. Int J Radiat Oncol Biol Phys. 82(4): 1389-96. March 2012.
12. J.Shen,J.M.Metz,T.C.Zhu,J.Panetta,J.Finlay,M. Xu-Welliver,J.Plastaras,Vaika Bar Ad, **S.Both**: Dosimetric Consequences of Pancreatic Tumor Motion when Predetermined Treatment Margins are Employed during Intensity-Modulated Radiation Therapy. Journal of BUON. Zerbinis Medical Publications. Greece, 17(12): 526-532, March 2012.
13. Jang JW, Hwang WT, Guzzo TJ, Wein AJ, Haas NB, **Both S**, Vapiwala N.: Upfront Androgen Deprivation Therapy With Salvage Radiation May Improve Biochemical Outcomes in Prostate Cancer Patients With Post-Prostatectomy Rising PSA. Int J Radiat Oncol Biol Phys. 1;83(5):: 1493-9, March 2012. PMCID: 22401922
14. Chowdhury N, Toth R, Chappelow J, Kim S, Motwani S, Puneekar S, Lin H, **Both S**, Vapiwala N, Hahn S, Madabhushi A.: Concurrent segmentation of the prostate on MRI and CT via linked statistical shape models for radiotherapy planning. Medical Physics 39(4), April 2012. PMCID: 22482643
15. LP. Bonner Millar, D Stripp, JD. Cooper, **S Both**, P James, R Rengan: Definitive Radiotherapy for Unresected Adenoid Cystic Carcinoma of the Trachea. CHEST 141(5): 1323-6. May 2012.
16. BarAd V, Dutta P, Solin LJ, Hwang WT, Tan KS, **Both S**, Cheville A, Harris ER: Time-course of Arm Lymphedema and Potential Risk Factors for Progression of Lymphedema after Breast Conservation Treatment for Early Stage Breast Cancer Breast J. 18(3):219-25, May-Jun 2012.
17. Deville, **S Both**, V Bui, W Hwang, K Tan, M Schaer, Z Tochner and N Vapiwala : Acute Gastrointestinal and Genitourinary Toxicity of Image-Guided Intensity Modulated Radiation Therapy for Prostate Cancer using a Daily Water-Filled Endorectal Balloon Radiation Oncology 23(7), May 2012.

18. S Tang, **S Both**, H Bentefour, JJ. Paly¹, Z Tochner, J Efstathiou¹, H Ming Lu¹: Improvement of prostate treatment by anterior proton fields. Int J Radiat Oncol Biol Phys. 83(1): 408-18, May 2012.
19. K Kang-Hsin Wang, N Vapiwala, C Deville, JP. Plastaras, R Scheuermann, H Lin, V Bar Ad, Z Tochner, and **S Both**: A Study to Quantify the Effectiveness of Daily Endorectal Balloon (ERB) for Prostate Intrafraction Motion Management. Int J Radiat Oncol Biol Phys. 83(3): 1055-63, July 2012.
20. Zou W, Lin H, Plastaras JP, Wang H, Bui V, Vapiwala N, McDonough J, Tochner Z, **Both S.**: A clinically feasible method for the detection of potential collision in proton therapy. Medical Physics 39(11): 7094-101, November 2012.
21. V Bar Ad, Lin H, Hwang WT, C Deville, P Dutta, Z Tochner, **S Both**: Larynx-Sparing Techniques using Intensity-Modulated Radiation Therapy for Oropharyngeal Cancer. Medical Dosimetry 37(4): 383-6, Winter 2012
22. A Ayan, H Lin, C Yeager, C Deville, J McDonough, T Zhu, N Anderson, V Bar Ad, H Lu and **S Both**: Should image rotation be addressed during routine cone-beam CT quality assurance? Physics in Medicine and Biology 58(4): 1059-73, February 2013.
23. Bar-Ad V, Leiby B, Witek M, Xiao Y, Cui Y, Dai Y, Cao J, Axelrod R, Campling B, **Both S**, Werner-Wasik M. : Treatment-related Acute Esophagitis For Patients With Locoregionally Advanced Non-small Cell Lung Cancer Treated With Involved-field Radiotherapy And Concurrent Chemotherapy. Am J Clin Oncol February 2013.
24. M Damek-Poprawa, **S Both**, AC Wright, A Maity, SO Akintoye: Onset of mandible and tibia osteoradionecrosis - a comparative pilot study in the rat Oral Surg Oral Med Oral Pathol Oral Radiol. 115(2): 201-11, February 2013.
25. AT Berman, BK Teo, D Dolney, S Swisher- McClure, K Shahnazi, **S Both** and R Rengan: An In-silico Comparison of Proton Beam and IMRT for Postoperative Radiotherapy in Completely Resected Stage IIIA Non-Small Cell Lung Cancer. Radiation Oncology 8(1)(144), June 2013.
26. Kumar RJ, Zhai H, **Both S**, Tochner Z, Lustig R, Hill-Kayser CE. : Breast Cancer Screening for Childhood Cancer Survivors after Craniospinal Irradiation with Protons versus X-Rays: A Dosimetric Analysis and Review of the Literature. J Pediatric Hematology Oncology 35(6): 462-7, August 2013.
27. C Hill-Kayser, Z Tochner, **S Both**, R Lustig, A Reilly, N Balamuth, R Womer, J Maris, S Grupp, R Bagatell.: Proton versus Photon Radiation Therapy for Patients with High-Risk Neuroblastoma: The Need for a Customized Approach Pediatric Blood & Cancer 60 (10): 1606-11, October 2013.
28. S Tang, C Deville, J McDonough, Z Tochner, K Wang, N Vapiwala, **S Both**: Effect of Intrafraction Prostate Motion on Proton Pencil Beam Scanning Delivery: A Quantitative Assessment. Int J Radiat Oncol Biol Phys 87 (2): 375-82, October 2013.
29. A.R. Stan, M. Alecu, R. Alecu, **S. Both** and O. Cozar: A mammosite multilumen (MS-ML) balloon used for accelerated partial breast irradiation. Rom. Journ. Phys. 58: 117-126, 2013.

30. J Christodouleas, S Tang, RC Susil, TR McNutt, DY Song, J Bekelman, C Deville, N Vapiwala, TL DeWeese, H Lu, **S Both**, PhD: The impact of anterior proton beams in the setting of a prostate-rectum spacer. Medical Dosimetry 38 (3): 315-9, Autumn 2013.
31. CH Chapman, WT Hwang, **S Both**, CR Thomas, and C Deville: The Current Status of Diversity by Race, Hispanic Ethnicity, and Sex in Diagnostic Radiology 270 (1): 232-40, January 2014.
32. Penny Fang, MD, Rosemarie Mick, MS, Curtiland Deville, MD, **Stefan Both**, PhD, Justin Bekelman, MD, John Christodouleas, MD MPH, Thomas Guzzo, MD MPH, Zelig Tochner, MD, Stephen Hahn, MD, Neha Vapiwala, MD: A Case-Matched Study of Toxicity Outcomes after Proton Therapy and Intensity-Modulated Radiation Therapy with Photons for Prostate Cancer. Cancer April 1;121(7):1118-27.
33. Lester-Coll NH, Morse CB, Zhai HA, **Both S**, Ginsberg JP, Gracia CR, Lustig RA, Tochner Z, Hill-Kayser CE : Preserving Fertility in Adolescent Girls and Young Women Requiring Craniospinal Irradiation: A Case Report and Discussion of Options to be Considered Prior to Treatment. Journal of Adolescent and Young Adult Oncology, 2014 Jun 1;3 (2):96-99.
34. Abigail T. Berman, **Stefan Both**, Tiffany Sharkoski, Katie Goldrath; Zelig Tochner, Smith Apisarnthanarax, James M. Metz, John P. Plastaras: Proton Reirradiation of Recurrent Rectal Cancer: Dosimetric Comparison, Toxicities, and Preliminary Outcomes. International Journal of Particle Therapy Summer 2014, Vol. 1, No. 1, pp. 2-13.
35. Ken Kang-Hsin Wang, Neha Vapiwala, Viet Bui, Curtiland Deville, John P. Plastaras, Voika Bar Ad, Zelig Tochner and **Stefan Both**: The Impact of Stool and Gas Volume on Intrafraction Prostate Motion in Patients Undergoing Radiotherapy with Daily Endorectal Balloon Radiotherapy and Oncology 2014 Jul;112 (1):89-94.
36. Lin, Haibo; Ding, Xuanfeng; Yin, Lingshu; Zhai, Huifang; Liu, Haoyang; Kassaei, Alireza; Hill-Kayser, Christine; Lustig, Robert; McDonough, James; **Both, Stefan** : Effects of titanium mesh on passive-scattering proton dose. Physics in Medicine and Biology, 59(2014) 10 N81.
37. Reid F. Thompson, Sonal Myer, Huifang Zhai, **Stefan Both** , Smith Apisarnthanarax, James M. Metz, John P. Plastaras, Edgar Ben-Josef : A Dosimetric Comparison of Proton and Photon Therapy in Unresectable Cancers of the Head of Pancreas. Medical Physics 2014 Aug;41(8):081711.
38. Haibo Lin, Xuanfeng Ding, Maura Kirk, Haoyang Liu, Huifang Zhai, Christine E. Hill-Kayser, Robert A Lustig, Zelig Tochner, **Stefan Both** and James McDonough : Supine Craniospinal Irradiation using a Proton Pencil Beam Scanning Technique without Match Line Changes for Field Junctions. International Journal of Radiation Oncology, Biology, Physics- 2014 September 1;90(1):71-8.
39. **Stefan Both**, Jiajian Shen, Maura Kirk, Liyong Lin, Shikui Tang, Michelle Alonso- Basanta, Robert Lustig, Haibo Lin, Curtiland Deville, Christine Hill-Kayser, Zelig Tochner and James McDonough.: Development and Clinical Implementation of a Universal Bolus to Maintain Spot Size during Delivery of Base of Skull Pencil Beam Scanning Proton Therapy. Int J Radiat Oncol Biol Phys. 2014 September 1;90(1):79-84.
40. Curtiland Deville, Christina H. Chapman, Ramon Burgos, Wei-Ting Hwang, **Stefan Both**, Charles R. Thomas, Jr.: Diversity by Race, Hispanic Ethnicity, and Sex of the United States Medical Oncology Physician Workforce Over the Past Quarter Century. Journal of Oncology Practice, 2014 Sep;10(5):e328-34.

41. Shikui Tang, Curtiland Deville, Zelig Tochner, Ken Kang-Hsin Wang, James McDonough, Neha Vapiwala and **Stefan Both**: Impact of Intrafraction and Residual Interfraction Effect on Prostate Proton Pencil Beam Scanning. International Journal of Radiation Oncology, Biology, Physics – 2014 December 1;90(5):1186-94.
42. Gandhi SJ, Liang X, Ding X, Zhu TC, Ben-Josef E, Plastaras JP, Metz JM, **Both S**, Apisarnthanarax S.: Clinical decision tool for optimal delivery of liver stereotactic body radiation therapy (SBRT): photons versus protons. Practical Radiation Oncology- 2015 Feb 18. pii: S1879-8500(15)00005-3.
43. Ojerholm Eric; Kirk, Maura; Thompson, Reid; Zhai, Huifang; Metz, James; **Both, Stefan**; Ben-Josef, Edgar; Plastaras, John.: Pencil-beam scanning proton therapy for anal cancer: a dosimetric comparison with intensity-modulated radiotherapy. Acta Oncologica, 2015 Mar 3: 1-9.
44. Benjamin M. White¹ PhD; Sabina Vennarini MD; Lilie Lin MD; Gary Freedman MD; Anand Santhana³ PhD; Daniel A. Low PhD; **Stefan Both** PhD: Accuracy of routine treatment planning 4D and DIBH CT delineation of the left anterior descending artery in radiotherapy. International Journal of Radiation Oncology, Biology, Physics. 2015 March 15;91(4):825-31.
45. Maura L Kirk, Shikui Tang, Huifang Zhai, Neha Vapiwala, Curtiland Deville, Paul James, Justin E Bekelman, John P Christodouleas, Zelig Tochner and **Stefan Both** : Comparison of prostate proton treatment planning technique interfraction robustness and analysis of single field treatment feasibility. Practical Radiation Oncology- 2015 March-April;5(2):99-105.
- 46 Zeng, Chuan; Plastaras, John; Tochner, Zelig; White, Benjamin; Hill-Kayser, Christine; Hahn, Stephen; **Both, Stefan**: Proton pencil beam scanning for mediastinal lymphoma: the impact of interplay between target motion and beam scanning. Physics, Medicine, Biology- 60 (2015) 3013-3029.
47. Kanograt Tangsriwong, Maura Kirk, **Stefan Both**, Alexander Lin: Potential Impact of Daily Setup Variation on Pencil-Beam Scanning for Head and Neck Cancer. International Journal of Particle Therapy Jul 2015.
48. Lin L.L., Vennarini S., Dimofte A., Ravanelli D., Shillington K., Batra S., Tochner Z., **Both S.**, Freedman G.: Proton beam versus photon beam dose to heart and left anterior descending artery for left-sided breast cancer. Acta Oncol 54(7), Jul 2015.
49. Curtiland Deville, Wei-Ting Hwang, Ramon Burgos, Christina H. Chapman, **Stefan Both**, and Charles R. Thomas, Jr.: Diversity in Graduate Medical Education in the United States by Race, Ethnicity, and Sex, 2012 JAMA Internal Medicine 175(10), Oct 2015.

50. Janid P.B., Kiely; Arthur, Olszanski; **S. Both**; D. Low; B. White: Quantitative early decision making metric for identifying irregular breathing in 4D CT. *Medical Physics* 42(10): 5654-60, Oct 2015
51. El Hassane Bentefour, **Stefan Both**, Shikui Tang, David Wikler, Hsiao-Ming Lu: Using CBCT for pre-treatment range check in proton therapy: a phantom study for prostate treatment by Anterior-Posterior beam. *Journal of Applied Clinical Medical Physics* 16(6), Nov 2015.
52. Brian Baumann, Kate Noa, E. Paul Wileyto, Justin Bekelman, Curtiland Deville, Neha Vapiwala, Maura Kirk, **Stefan Both**, Derek Dolney, Ali Kassaei, and John Christodouleas: Adjuvant radiation therapy for bladder cancer: a dosimetric comparison of techniques. *Medical Dosimetry* 40(4), Winter 2015.
53. Ayobami Ajayi, Wei-Ting Hwang, Neha Vapiwala, Christina Chapman, Mark Rosen, **Stefan Both**, Meera Shah, Xingmei Wang, Atu Agawu, Peter Gabriel, John Christodouleas, Zelig Tochner, Curtiland Deville: Disparities in Staging Prostate Magnetic Resonance Imaging Utilization for Non-Metastatic Prostate Cancer Patients Undergoing Definitive Radiotherapy, *Advances in Radiation Oncology* 2016 accepted.
54. Jennifer Vogel, Haibo Lin, **Stefan Both**, Zelig Tochner, Frank Balis, Christine Hill-Kayser: Pencil Beam Scanning Proton Therapy for Treatment of the Retroperitoneum after Nephrectomy for Wilms Tumor: A Dosimetric Comparison Study. *Pediatric Blood and Cancer* 2016 accepted.
55. Mikhail Higgins, Wei-Ting Hwang, Chase Richards, Christina H. Chapman, Angelique Laporte, **Stefan Both**, Charles R. Thomas, Jr., and Curtiland Deville.: Underrepresentation of Women and Minorities in the United States Vascular and Interventional Radiology Academic Physician Workforce. *Journal of Vascular and Interventional Radiology* 2016 accepted.
56. Lilie Lin, Maura Kirk, Jessica Scholey, Nicolette Taku, Janid B Kiely, Benjamin White, **Stefan Both**: Initial report of pencil beam scanning proton therapy for post-hysterectomy patients with gynecologic cancer. *International Journal of Radiation Oncology, Biology, Physics* -in press 95(1), May 2016.
57. Fernandes A, Berman AT, Mick R, **Both S**, Lelionins K, Luken JN, Ben-Josef E, Metz JM, Plastaras JP: A Prospective Study of Proton Beam Reirradiation for Esophageal Cancer, *Int J Radiat Oncol Biol Phys*. May 2016.
58. Chuan Zeng, John P. Plastaras, Paul James, Zelig A. Tochner, Christine E. Hill-Kayser, Stephe M. M. Hahn, **Stefan Both**: Proton pencil beam scanning for mediastinal lymphoma: treatment planning and robustness assessment. *Acta Oncol* Jun 2016.
59. Swisher-McClure S, Yin L, Rosen M, Batra S, Berman AT, **Both S**, Vapiwala N.: Prospective MRI-based imaging study to assess feasibility of proton therapy for post-prostatectomy radiation. *Acta Oncol* 55(7), Jul 2016.
60. Chao HH, Berman AT, Simone CB2nd, Ciunci C, Gabriel P, Lin H, **Both S**, Langer C, Lelionis K, Rengan R, Hahn SM, Prahbu K, Fagundes M, Hartsell W, Mick R, Plastaras JP: Multi-institutional Prospective Study of Reirradiation with Proton Beam Radiotherapy for Locoregionally Recurrent Non-Small Cell Lung Cancer, *J Thorac Oncol*. Nov 2016.
61. Higgins MC, Hwang WT, Richard C, Chapman CH, Laporte A, **Both S**, Thomas Cr Jr, Deville C: Underrepresentation of Women and minorities in the United States IR Physician Workforce, *J Vasc Interv Radiol*, Dec 2016.

62. Ajayi A, Hwang WT, Vapiwala N, Rosen M, Chapman CH, **Both S**, Shah M, Wang X, Agawu A, Gabriel P, Christodouleas J, Tochner Z, Deville C: Disparities in staging prostate magnetic resonance imaging utilization for nonmetastatic prostate cancer patients undergoing definitive radiation therapy. *Adv Radiat Oncol*. 2016 Jul 25;1(4):325-332. doi: 10.1016/j.adro.2016.07.003. eCollection Oct-Dec 2016.
63. Woodhouse KD, Hwang WT, Vapiwala N, Jain A, Wang X, **Both S**, Shah M, Frazier M, Gabriel P, Christodouleas JP, Tochner Z, Deville C: Sociodemographic disparities in the utilization of proton therapy for prostate cancer at an urban academic center. *Adv Radiat Oncol*. 2017 Jan 18;2(2):132-139. doi: 10.1016/j.adro.2017.01.004. eCollection Apr-Jun 2017.
64. Boimel PJ, Berman AT, Li J, Apisarnthanarax S, **Both S**, Lelionis K, Larson GL, Teitelbaum U, Lukens JN, Ben-Josef E, Metz JM, Plastaras JP: Proton beam reirradiation for locally recurrent pancreatic adenocarcinoma. *J Gastrointest Oncol*. 2017 Aug;8(4):665-674. doi: 10.21037/jgo.2017.03.04.
65. Chang JY, Zhang X, Knopf A, Li H, Mori S, Dong L, Lu HM, Liu W, Badiyan SN, **Both S**, Meijers A, Lin L, Flampouri S, Li Z, Umegaki K, Simone CB 2nd, Zhu XR: Consensus Guidelines for Implementing Pencil-Beam Scanning Proton Therapy for Thoracic Malignancies on Behalf of the PTCOG Thoracic and Lymphoma Subcommittee. *Int J Radiat Oncol Biol Phys*. 2017 Sep 1;99(1):41-50. doi: 10.1016/j.ijrobp.2017.05.014. Epub 2017 May 19.
66. Vogel J, **Both S**, Kirk M, Chao HH, Bagatell R, Li Y, Womer R, Balamuth N, Reilly A, Kurtz G, Lustig R, Tochner Z, Hill-Kayser C.: Proton therapy for pediatric head and neck malignancies, *Pediatr Blood Cancer*. 2018 Feb;65(2). doi: 10.1002/pbc.26858. Epub 2017 Oct 23.
67. Xu MJ, Maity A, Vogel J, Kirk M, Zhai H, **Both S**, Lin LL: Proton Therapy Reduces Normal Tissue Dose in Extended-Field Pelvic Radiation for Endometrial Cancer. *Int J Part Ther*. 2018 Winter;4(3):1-11. doi: 10.14338/IJPT-17-00027.1. Epub 2018 Mar 21.
68. Deville C Jr, Jain A, Hwang WT, Woodhouse KD, **Both S**, Wang S, Gabriel PE, Christodouleas JP, Bekelman J, Tochner Z, Vapiwala N.: Initial report of the genitourinary and gastrointestinal toxicity of post-prostatectomy proton therapy for prostate cancer patients undergoing adjuvant or salvage radiotherapy. *Acta Oncol*. 2018 Nov;57(11):1506-1514. doi: 10.1080/0284186X.2018.1487583. Epub 2018 Jul 20.
69. Kierkels RGJ, Fredriksson A, **Both S**, Langendijk JA, Scandurra D, Korevaar EW.: Automated Robust Proton Planning Using Dose-Volume Histogram-Based Mimicking of the Photon Reference Dose and Reducing Organ at Risk Dose Optimization. *Int J Radiat Oncol Biol Phys*. 2019 Jan 1;103(1):251-258. doi: 10.1016/j.ijrobp.2018.08.023. Epub 2018 Aug 24.
70. Ribeiro CO, Meijers A, Korevaar EW, Muijs CT, **Both S**, Langendijk JA, Knopf A.: Comprehensive 4D robustness evaluation for pencil beam scanned proton plans. *Radiother Oncol*. 2019 Jul;136:185-189. doi: 10.1016/j.radonc.2019.03.037. Epub 2019 Apr 20.
71. Wagenaar D, Kierkels RGJ, Free J, Langendijk JA, **Both S**, Korevaar EW: Composite minimax robust optimization of VMAT improves target coverage and reduces non-target dose in head and neck cancer patients. *Radiother Oncol*. 2019 Jul;136:71-77. doi: 10.1016/j.radonc.2019.03.019. Epub 2019 Apr 11.

72. Baumann BC, Lustig RA, Mazzoni S, Grady SM, O'Malley BW, Lee JYK, Newman JG, Schuster JM, **Both S**, Lin A, Dorsey JF, Alonso-Basanta M.: A prospective clinical trial of proton therapy for chordoma and chondrosarcoma: Feasibility assessment. *J Surg Oncol.* 2019 Aug;120(2):200-205. doi: 10.1002/jso.25502. Epub 2019 May 20.
73. Grewal AS, Schonewolf C, Min EJ, Chao HH, **Both S**, Lam S, Mazzoni S, Bekelman J, Christodouleas J, Vapiwala N.: Four-Year Outcomes From a Prospective Phase II Clinical Trial of Moderately Hypofractionated Proton Therapy for Localized Prostate Cancer. *Int J Radiat Oncol Biol Phys.* 2019 Nov 15;105(4):713-722. doi: 10.1016/j.ijrobp.2019.05.069. Epub 2019 Jun 11.
74. Hamming VC, Visser C, Batin E, McDermott LN, Busz DM, **Both S**, Langendijk JA, Sijtsema NM: Evaluation of a 3D surface imaging system for deep inspiration breath-hold patient positioning and intra-fraction monitoring. *Radiat Oncol.* 2019 Jul 11;14(1):125. doi: 10.1186/s13014-019-1329-6.
75. Santos PMG, Barsky AR, Hwang WT, Deville C, Wang X, **Both S**, Bekelman JE, Christodouleas JP, Vapiwala N.: Comparative toxicity outcomes of proton-beam therapy versus intensity-modulated radiotherapy for prostate cancer in the postoperative setting. *Cancer.* 2019 Dec 1;125(23):4278-4293. doi: 10.1002/cncr.32457. Epub 2019 Sep 10.
76. van der Laan HP, Anakotta RM, Korevaar EW, Dieters M, Ubbels JF, Wijsman R, Sijtsema NM, **Both S**, Langendijk JA, Muijs CT, Knopf AC.: Organ sparing potential and inter-fraction robustness of adaptive intensity modulated proton therapy for lung cancer. *Acta Oncol.* 2019 Dec;58(12):1775-1782. doi: 10.1080/0284186X.2019.1669818. Epub 2019 Sep 26.
77. van Dijk LV, Van den Bosch L, Aljabar P, Peressutti D, **Both S**, J H M Steenbakkers R, Langendijk JA, Gooding MJ, Brouwer CL.: Improving automatic delineation for head and neck organs at risk by Deep Learning Contouring. *Radiother Oncol.* 2020 Jan;142:115-123. doi: 10.1016/j.radonc.2019.09.022. Epub 2019 Oct 22.
78. Meijers A, Jakobi A, Stützer K, Guterres Marmitt G, **Both S**, Langendijk JA, Richter C, Knopf A. Log file-based dose reconstruction and accumulation for 4D adaptive pencil beam scanned proton therapy in a clinical treatment planning system: Implementation and proof-of concept. *Med Phys.* 2019 Mar;46(3):1140-1149.
79. Wagenaar D, Tran LT, Meijers A, Marmitt GG, Souris K, Bolst D, James B, Biasi G, Povoli M, Kok A, Traneus E, van Goethem MJ, Langendijk JA, Rosenfeld AB, **Both S**: Validation of linear energy transfer computed in a Monte Carlo dose engine of a commercial treatment planning system. *Phys Med Biol.* 2020 Jan 17;65(2):025006. doi: 10.1088/1361-6560/ab5e97.
80. Thummerer A, Zaffino P, Meijers A, Marmitt GG, Seco J, Steenbakkers RJHM, Langendijk JA, **Both S**, Spadea MF, Knopf AC.: Comparison of CBCT based synthetic CT methods suitable for proton dose calculations in adaptive proton therapy. *Phys Med Biol.* 2020 Mar 6. doi: 10.1088/1361-6560/ab7d54. [Epub ahead of print]
81. G. Guterres Marmitt, A. Pin, K. Ng Wei Siang, G. Janssens, K. Souris, M. Cohilis, J.A. Langendijk, **S. Both**, A. Knopf, A. Meijers: Platform for automatic patient quality assurance via Monte Carlo simulations in proton therapy. *Physics Medica-EJMP.* 70, p.49-57.

82. Meijers, A., Free, J., Wagenaar, D., Deffet, S., Knopf, A-C., Langendijk, J. A., **Both. S.**: Validation of the proton range accuracy and optimization of CT calibration curves utilizing range probing. *Physics in Medicine & Biology*, Volume 65, Number 3
83. den Otter, L. A., Anakotta, R. M., Weessies, M., Roos, C. T. G., Sijtsema, N. M., Muijs, C. T., Dieters, M., Wijsman, R., Troost, E. G. C., Richter, C., Meijers, A., Langendijk, J. A., Both, S. & Knopf, A-C. : Investigation of inter-fraction target motion variations in the context of pencil beam scanned proton therapy in non-small cell lung cancer patients, *Medical Physics*, 23-Jun-2020
84. Brodbek, L., Kretschmer, J., Willborn, K., Meijers, A., Both, S., Langendijk, J. A., Knopf, A-C., Khee Looe, H. & Poppe, B., Analysis of the applicability of two-dimensional detector arrays in terms of sampling rate and detector size to verify scanned intensity modulated proton therapy plans, *Medical Physics*, 23-Jun-2020.
85. Curtiland Deville Jr , Wei-Ting Hwang , Andrew R. Barsky , **Stefan Both**, John P. Christodouleas , Justin E. Bekelman , Zelig Tochner & Neha Vapiwala: Initial clinical outcomes for prostate cancer patients undergoing adjuvant or salvage proton therapy after radical prostatectomy, *Acta Oncologica* 2020, Vol. 59, No. 10.
86. R. Melissa Anakotta, Hans P. van der Laan, Sabine Visser, Cassia O. Ribeiro, Margriet Dieters, Johannes A. Langendijk, **Stefan Both**, Erik W. Korevaar, Nanna M. Sijtsema, Antje Knopf, Christina T. Muijs: Weekly robustness evaluation of intensity-modulated proton therapy for esophageal cancer, *Radiotherapy and Oncology* 151 (2020) 66–72.
87. Elske M. Gort, Jannet C. Beukema, Witold Matysiak, Nanna M. Sijtsema, Shafak Aluwini, Johannes A. Langendijk, **Stefan Both**, Charlotte L. Brouwer: Inter-fraction motion robustness and organ sparing potential of proton therapy for cervical cancer, *Radiotherapy and Oncology* 154 (2021) 194–200195.
88. Dirk Wagenaar , Roel G J Kierkels , Arjen van der Schaaf , Arturs Meijers , Daniel Scandurra , Nanna M Sijtsema , Erik W Korevaar , Roel J H M Steenbakkers , Antje C Knopf , Johannes A Langendijk , **Stefan Both**: Head and neck IMPT probabilistic dose accumulation: Feasibility of a 2 mm setup uncertainty setting, *Radiother Oncol.* 2020 Sep 6;154:45-52.
89. Meijers A, Knopf AC, Crijns APG, Ubbels JF, Niezink AGH, Langendijk JA, Wijsman R, **Both S.**: Evaluation of interplay and organ motion effects by means of 4D dose reconstruction and accumulation, *Radiother Oncol.* 2020 Sep;150:268-274.
90. Tambas M, Steenbakkers RJHM, van der Laan HP, Wolters AM, Kierkels RGJ, Scandurra D, Korevaar EW, Oldehinkel E, van Zon-Meijer TWH, **Both S**, van den Hoek JGM, Langendijk JA: First experience with model-based selection of head and neck cancer patients for proton therapy, *Radiother Oncol.* 2020 Aug 6;151:206-213.
91. Arturs Meijers, Gabriel Guterres Marmitt, Kelvin Ng Wei Siang, Arjen van der Schaaf, Antje C Knopf, Johannes A Langendijk , **Stefan Both**: Feasibility of patient specific quality assurance for proton therapy based on independent dose calculation and predicted outcomes, *Radiotherapy and Oncology* 150 (2020) 136–141.

92. Carmen Seller Oria, Gabriel G Marmitt, **Stefan Both**, Johannes A Langendijk, Antje-Christin Knopf , Arturs Meijers: Classification of various sources of error in range assessment using proton radiography and neural networks in head and neck cancer patients, *Phys Med Biol.* 2020 Oct 13.
93. Lydia A. den Otter, Kuanling Chen, Guillaume Janssens, Arturs Meijers, **Stefan Both**, Johannes A. Langendijk, Lane R. Rosen, Hsinshun T. Wu, Antje-Christin Knopf: Technical note: 4D cone-beam CT reconstruction from sparse-view CBCT data for daily motion assessment in pencil beam scanned proton therapy (PBS-PT), *Medical Physics*, First published, 04 Oct. 2020.
94. Charlotte L. Brouwer, Djamal Boukerrouib, Jorge Oliveria, Padraig Looney, Roel J.H.M. Steenbakkers, Johannes A. Langendijk, **Stefan Both**, Mark J. Gooding: Assessment of manual adjustment performed in clinical practice following deep learning contouring for head and neck organs at risk in radiotherapy , *Physics and Imaging in Radiation Oncology* , Accepted 01.Oct. 2020.
95. Ribeiro, Cássia; Terpstra, Jorvi; Janssens, Guillaume; Langendijk, Johannes; **Both, Stefan**; Muijs, Christina ; Wijsman, Robin; Knopf, Antje-Christin; Meijers, Arturs: Evaluation of continuous beam rescanning versus pulsed beam in pencil beam scanned proton therapy for lung tumours, *Phys Med Biol.* Accepted 29 Oct 2020.
96. Barsky AR, Carmona R, Santos PMG, Verma V, **Both S**, Bekelman JE, Christodouleas JP, Vapiwala N, Deville C. Comparative Clinical Outcomes and Patterns of Failure of Proton-Beam Therapy Versus Intensity-Modulated Radiotherapy (IMRT) for Prostate Cancer in the Postoperative Setting. *Pract Radiat Oncol.* 2020. Accepted.
97. Paganetti H, Beltran CJ, **Both S**, Dong L, Flanz JB, Furutani KM, Grassberger C, Grosshans DR, Knopf AC, Langendijk JA, Nyström H, Parodi K, Raaymakers BW, Richter C, Sawakuchi GO, Schippers JM, Shaitelman SF, Teo K, Unkelbach J, Wohlfahrt P, Lomax AJ. Roadmap: proton therapy physics and biology. *Phys Med Biol.* 2020 Nov 23. doi: 10.1088/1361-6560/abcd16. Epub ahead of print. PMID: 33227715.
98. Barsky AR, Carmona R, Verma V, Santos PMG, **Both S**, Bekelman JE, Christodouleas JP, Vapiwala N, Deville C Jr. Comparative Analysis of 5-Year Clinical Outcomes and Patterns of Failure of Proton Beam Therapy Versus Intensity Modulated Radiation therapy for Prostate Cancer in the Postoperative Setting. *Pract Radiat Oncol.* 2021 Mar-Apr;11(2):e195-e202.
99. Gan Y, Langendijk JA, Oldehinkel E, Scandurra D, Sijtsema NM, Lin Z, **Both S**, Brouwer CL. A novel semi auto-segmentation method for accurate dose and NTCP evaluation in adaptive head and neck radiotherapy. *Radiother Oncol.* 2021 Nov;164:167-174.
100. Gort EM, Beukema JC, Matysiak W, Sijtsema NM, Aluwini S, Langendijk JA, **Both S**, Brouwer CL. Inter-fraction motion robustness and organ sparing potential of proton therapy for cervical cancer. *Radiother Oncol.* 2021 Jan;154:194-200
101. Lin H, Shi C, Huang S, Shen J, Kang M, Chen Q, Zhai H, McDonough J, Tochner Z, Deville C, Simone CB 2nd, **Both S**. Applications of various range shifters for proton pencil beam scanning radiotherapy. *Radiat Oncol.* 2021 Aug 6;16(1):146.
102. Meijers A, Seller Oria C, Free J, Langendijk JA, Knopf AC, **Both S**. Technical Note: First report on an in vivo range probing quality control procedure for scanned proton beam therapy in head and neck cancer patients. *Med Phys.* 2021 Mar;48(3):1372-1380.

103. Ribeiro CO, Visser S, Korevaar EW, Sijtsema NM, Anakotta RM, Dieters M, **Both S**, Langendijk JA, Wijsman R, Muijs CT, Meijers A, Knopf A. Towards the clinical implementation of intensity-modulated proton therapy for thoracic indications with moderate motion: Robust optimised plan evaluation by means of patient and machine specific information. *Radiother Oncol.* 2021 Apr;157:210-218.
104. Seller Oria C, Marmitt GG, Free J, Langendijk JA, **Both S**, Knopf AC, Meijers A. Optimizing calibration settings for accurate water equivalent path length assessment using flat panel proton radiography. *Phys Med Biol.* 2021 Oct 21;66(21).
105. Seller Oria C, Thummerer A, Free J, Langendijk JA, **Both S**, Knopf AC, Meijers A. Range probing as a quality control tool for CBCT-based synthetic CTs: In vivo application for head and neck cancer patients. *Med Phys.* 2021 Aug;48(8):4498-4505.
106. Tambas M, van der Laan HP, Rutgers W, van den Hoek JGM, Oldehinkel E, Meijer TWH, van der Schaaf A, Scandurra D, Free J, **Both S**, Steenbakkers RJHM, Langendijk JA. Development of advanced preselection tools to reduce redundant plan comparisons in model-based selection of head and neck cancer patients for proton therapy. *Radiother Oncol.* 2021.
107. Thummerer A, Seller Oria C, Zaffino P, Meijers A, Guterres Marmitt G, Wijsman R, Seco J, Langendijk JA, Knopf AC, Spadea MF, **Both S**. Clinical suitability of deep learning based synthetic CTs for adaptive proton therapy of lung cancer. *Med Phys.* 2021 Dec;48(12):7673-7684.
108. van der Laan HP, van der Schaaf A, Van den Bosch L, Korevaar EW, Steenbakkers RJHM, **Both S**, Langendijk JA. Quality of life and toxicity guided treatment plan optimisation for head and neck cancer. *Radiother Oncol.* 2021 Sep;162:85-90.
109. Visser S, den Otter LA, Ribeiro CO, Korevaar EW, **Both S**, Langendijk JA, Muijs CT, Sijtsema NM, Knopf A. Diaphragm-Based Position Verification to Improve Daily Target Dose Coverage in Proton and Photon Radiation Therapy Treatment of Distal Esophageal Cancer. *Int J Radiat Oncol Biol Phys.* 2021 Sep 14:S0360-3016 (21) 02814-5.
110. Visser S, Neh H, Oraboni Ribeiro C, Korevaar EW, Meijers A, Poppe B, Sijtsema NM, **Both S**, Langendijk JA, Muijs CT, Knopf AC. Assessment of a diaphragm override strategy for robustly optimized proton therapy planning for esophageal cancer patients. *Med Phys.* 2021 Oct;48(10):5674-5683.
111. Wagenaar D, Kierkels RGJ, van der Schaaf A, Meijers A, Scandurra D, Sijtsema NM, Korevaar EW, Steenbakkers RJHM, Knopf AC, Langendijk JA, **Both S**. Head and neck IMPT probabilistic dose accumulation: Feasibility of a 2 mm setup uncertainty setting. *Radiother Oncol.* 2021 Jan;154:45-52.
112. Wagenaar D, Schuit E, van der Schaaf A, Langendijk JA, **Both S**. Can the mean linear energy transfer of organs be directly related to patient toxicities for current head and neck cancer intensity-modulated proton therapy practice? *Radiother Oncol.* 2021 Dec;165:159-165.
113. Bondesson D, Meijers A, Janssens G, Rit S, Rabe M, Kamp F, Niepel K, Otter LAD, **Both S**, Brousmiche S, Dinkel J, Belka C, Parodi K, Knopf A, Kurz C, Landry G. Anthropomorphic lung phantom based validation of in-room proton therapy 4D-CBCT image correction for dose calculation. *Z Med Phys.* 2022 Feb;32(1):74-84. doi: 10.1016/j.zemedi.2020.09.004. Epub 2020 Nov 25. PMID: 33248812.

114. de Jong BA, Battinelli C, Free J, Wagenaar D, Engwall E, Janssens G, Langendijk JA, Korevaar EW, **Both S**. Spot scanning proton arc therapy reduces toxicity in oropharyngeal cancer patients. *Med Phys*. 2022 Nov 14. doi: 10.1002/mp.16098. Epub ahead of print. PMID: 36373893. 31.33.
115. Hamming VC, Andersson S, Maduro JH, Langendijk JA, **Both S**, Sijtsema NM. Daily dose evaluation based on corrected CBCTs for breast cancer patients: accuracy of dose and complication risk assessment. *Radiat Oncol*. 2022 Dec 12;17(1):205. doi: 10.1186/s13014-022-02174-4. PMID: 36510254; PMCID: PMC9746176.
116. Scandurra D, Meijer TWH, Free J, van den Hoek JGM, Kelder L, Oldehinkel E, Steenbakkers RJHM, **Both S**, Langendijk JA. Evaluation of robustly optimised intensity modulated proton therapy for nasopharyngeal carcinoma. *Radiother Oncol*. 2022 Mar;168:221-228. doi: 10.1016/j.radonc.2022.01.043. Epub 2022 Feb 5. PMID: 35134448.
117. Thummerer A, Seller Oria C, Zaffino P, Visser S, Meijers A, Guterres Marmitt G, Wijsman R, Seco J, Langendijk JA, Knopf AC, Spadea MF, **Both S**. Deep learning-based 4D-synthetic CTs from sparse-view CBCTs for dose calculations in adaptive proton therapy. *Med Phys*. 2022 Nov;49(11):6824-6839. doi: 10.1002/mp.15930. Epub 2022 Aug 27. PMID: 35982630.
118. van Bruggen IG, Huiskes M, de Vette SPM, Holmström M, Langendijk JA, **Both S**, Kierkels RGJ, Korevaar EW. Automated robust planning for IMPT in oropharyngeal cancer patients using machine learning. *Int J Radiat Oncol Biol Phys*. 2022 Dec 16:S0360-3016(22)03629-X. doi: 10.1016/j.ijrobp.2022.12.004. Epub ahead of print. PMID: 36535432.
119. Visser S, den Otter LA, Ribeiro CO, Korevaar EW, **Both S**, Langendijk JA, Muijs CT, Sijtsema NM, Knopf A. Diaphragm-Based Position Verification to Improve Daily Target Dose Coverage in Proton and Photon Radiation Therapy Treatment of Distal Esophageal Cancer. *Int J Radiat Oncol Biol Phys*. 2022 Feb 1;112(2):463-474. doi: 10.1016/j.ijrobp.2021.09.015. Epub 2021 Sep 14. PMID: 34530091.
120. Visser S, O Ribeiro C, Dieters M, Mul VE, Niezink AGH, van der Schaaf A, Knopf AC, Langendijk JA, Korevaar EW, **Both S**, Muijs CT. Robustness assessment of clinical adaptive proton and photon radiotherapy for esophageal cancer in the model-based approach. *Radiother Oncol*. 2022 Dec;177:197-204. doi: 10.1016/j.radonc.2022.11.001. Epub 2022 Nov 8. PMID: 36368472.
121. Carmen Seller Oria, Jeffrey Free, Gabriel Guterres Marmitt, Barbara Knäusl, Sytze Brandenburg, Antje C. Knopf, Arturs Meijers, Johannes A. Langendijk, **S Both**. Technical note: Flat panel proton radiography with a patient specific imaging field for accurate WEPL assessment. 11 January 2023 <https://doi.org/10.1002/mp.16208>, *Med Phys*.

2. Books, book chapters and reviews

1. "The Physics of Radiation Therapy" AAPM/IOMP European Summer School Book. Co-Editor, **S. Both** (eds.). 1999.
2. **S. Both**: "Modern Brachytherapy Techniques 2000," ESTRO News 2000.
3. **S. Both**: "Study Guide for Radiation Oncology Physics Board Exams," *Medical Physics* 28(7), July 2001

4. V Bar Ad and **S Both**: Mitigating Toxicity Associated with the Treatment for Head and Neck Cancers. Journal of Radiotherapy & Medical Oncology 4: 287-290, 2007.
5. **S Both** and V Bar Ad: Prostate Intensity Modulated Radiotherapy (IMRT) in the 4D Era. Journal of Radiotherapy & Medical Oncology. Romanian Society of Radiotherapy & Medical Oncology, XIV(1): 13, 2008.
6. CE Hill-Kayser, **S Both**, Z Tochner: Proton Therapy: Ever Shifting Sands and the Opportunities and Obligations Within Front Oncol 1(24), September 2011.
7. **S Both**, C Deville, Viet Bui, K Kang-Hsin Wang, N Vapiwala: Emerging evidence for the role of an endorectal balloon in prostate radiation therapy Translational Cancer Research 1(3), October 2012.
8. Joann I. Prisciandaro, Ph.D. (Work Group Chair)University of Michigan, Ann Arbor, Michigan Charles E. Willis, Ph.D. (Work Group Vice Chair)The University of Texas MD Anderson Cancer Center, Houston, Texas Jay W. Burmeister, Ph.D. Wayne State University, Detroit, Michigan Geoffrey D. Clarke, Ph.D. UT Health Sciences Center, San Antonio, Texas Rupak K. Das, Ph.D. University of Wisconsin, Madison, Wisconsin Jacqueline Esthappan, Ph.D. Washington University, St. Louis, Missouri Bruce J. Gerbi, Ph.D. University of Minnesota, Minneapolis, Minnesota Beth A. Harkness, M.S. Henry Ford Hospital System, Detroit, Michigan James A. Patton, Ph.D. Vanderbilt University, Nashville, Tennessee Donald J. Peck, Ph.D. Henry Ford Health Systems, Detroit, Michigan Robert J. Pizzutiello Jr., M.S. Upstate Medical Physics, Victor, New York George A. Sandison, Ph.D. University of Washington, Seattle, Washington Sharon L. White, Ph.D. University of Alabama, Birmingham, Alabama Brian D. Wichman, M.S. Texas Oncology, Round Rock, Texas Consultants: Geoffrey S. Ibbott, Ph.D. The University of Texas MD Anderson Cancer Center, Houston, Texas **Stefan Both**, Ph.D. University of Pennsylvania, Philadelphia, Pennsylvania: Essentials and Guidelines for Clinical Medical Physics Residency Training Programs: Report from the Work Group on Periodic Review of Medical Physics Residency Training American Association of Physicists in Medicine: Report Number 249 http://aapm.org/pubs/reports/RPT_249.pdf Notes: http://aapm.org/pubs/reports/RPT_249.pdf. October 2013
9. B. Winey, H. Shih, N. Saho, A. Lee, N. Vapiwala, **S. Both**: Core physics competencies for proton therapy training of radiation oncology and medical physics residents and fellows. Int J Radiat Oncol Biol Phys. 15(88(4)), March 2014.
10. Joann I. Prisciandaro, Charles E. Willis, Jay W. Burmeister, Geoffrey D. Clarke, Rupak K. Das, Jacqueline Esthappan, Bruce J. Gerbi, Beth A. Harkness, James A. Patton, Donald J. Peck, Robert J. Pizzutiello Jr, George A. Sandison, Sharon L. White, Brian D. Wichman, Geoffrey S. Ibbott, **Stefan Both**: Essentials and guidelines for clinical medical physics residency training programs: executive summary of AAPM Report Number 249 Journal of Clinical Applied Medical Physics 15(3), May 2014.
11. Khan's Treatment Planning in Radiation Oncology , 4th Edition; John P. Plastaras, **Stefan Both**, Amit Maity, and Eli Glatstein: The Lymphomas, Wolters Kluwer 2016.
12. Target Volume Delineation and Treatment Planning for Particle Therapy, Physics Editor/Co-Editor, **S. Both**, Springer 2017.

13. Target Volume Delineation and Treatment Planning for Particle Therapy: Chuan Zeng, Richard A. Amos, Brian Winey, Chris Beltran, Ziad Saleh, Zelig Tochner, Hanne Kooy, and **Stefan Both**: Proton Treatment Planning, Springer 2017.
14. Target Volume Delineation and Treatment Planning for Particle Therapy: Jonathan E. Leeman, Paul Romesser, James Melotek, Oren Cahlon, Kevin Sine, **Stefan Both** and Nancy Lee: Salivary Gland Tumors, Springer 2017.
15. Target Volume Delineation and Treatment Planning for Particle Therapy: John P. Plastaras, **Stefan Both**, Haibo Lin and Maria Hawkins: Lower Gastrointestinal Malignancies, Springer 2017.
16. Target Volume Delineation and Treatment Planning for Particle Therapy, Curtiland Deville, Matthew Ladra, Hifang Zhai, Moe Siddiqui, **Stefan Both** and Haibo Lin: Sarcoma, Springer 2017.
17. Dosimetry, QA and auditing of proton- and ion-beam therapy facilities: Arturs Meijers, Gabriel Guterres Marmitt, Antje Knopf, Richard Amos, **Stefan Both**: Patient-specific quality assurance, accepted, Institute of Physics, UK 2020
18. Khan's Treatment Planning in Radiation Oncology , 5th Edition; John P. Plastaras, **Stefan Both**, Ima Paydar: The Lymphomas, Wolters Kluwer 2021.

3. Alternative Media

1. Kate Doyle: Trend Report: Proton Beam Cancer Therapy Centers Are This Season's Must-Have, HealthBiz Decoded August 2013 Notes: **S Both** comment for Healthbiz Decoded, an online healthcare business magazine in NY.
2. **S. Both**: Proton Treatment Planning Module, IBA/Oncolink.Online, Oncolink 2014
3. **Stefan Both** hoogleraar op leerstoel protonentherapie, UMCG Online
4. Freek Schuler: Proton professor fights cancer, **S Both**, interview for UKKRANT.NL, 2017
5. University Medical Center Groningen Performs Automatic Log-based Proton Therapy Patient QA **S Both** comment for IBA News, 2019
6. The Patient QA Environment for Proton Therapy, **S Both** comment for IBA Dosimetry, 2019
7. Proton Arc, **S Both** comment for IBA Proton Therapy
8. FLASH in Proton Therapy, **S Both** comment for IBA Proton Therapy, 2021

4. Conference Presentations(Poster, Oral):

More than 200 presentations