

CURRICULUM VITAE

Peter Kuess

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PERSONAL DATA

Date of Birth September 8th, 1982
Place of Birth Klagenfurt (Austria)
Citizenship Austria
Degrees Mag. rer. nat.
 PhD

SCIENTIFIC OUTPUT - OVERVIEW

First/Last author (Top Journal)	8
First/Last author (Standard Journal)	2
Co-author (Top Journal)	11
Co-author (Standard Journal)	15
Total Nr. of Publications	36

ORCID: 0000-0003-2961-1692

H-Index: 10

[Link to Scopus profile](#)

[Link to Publons profile](#)

Vienna, April 2020

PROFESSIONAL EXPERIENCE

- 02/2010–11/2014 Scientific assistant at the Department of Radiation Oncology,
Medical University Vienna (employed within the ENVISION project)
- since 12/2014 employed as assistant post-doc at the Department of Radiation Oncology,
Medical University Vienna
Paternity Leave (07/2019–12/2019)
part-time Medical Physicists at EBG MedAustron

EDUCATION

- 09/1997–06/2002 High School for IT and Business in Villach
- 10/2003–06/2009 Diploma Study in Physics (University Vienna)
- 6/2009 **Master of Science in Physics** (Mag., with distinction) Vienna Environmental Research Accelerator (VERA), Nuclear Physics and Isotopic Research, Faculty of Physics, in cooperation with the Institute of Atomic and Subatomic Physics, Vienna
Master thesis: *"Exploring AMS for the measurement of the (n,gamma) cross-section of ²⁰⁹Bi at energies relevant for nuclear astrophysics and nuclear technology"*
Supervisor: Prof. Dr. Robin Golser, Dr. Anton Wallner
- 10/2009–06/2014 **PhD in Medical Physics**
Department of Radiation Oncology, Division of Medical Physics,
Medical University Vienna
PhD Thesis: *Automated analysis of positron emission tomography (PET) based in-vivo monitoring in hadron therapy*
Supervisor: Prof. Dr. Dietmar Georg
- 12/2018 *"Fachanerkennung für Medizinische Physik"*
according to ÖGMP (Job title *"Medizinphysiker"*)

PUBLICATIONS

Published Journal Articles

First/Last Author in Top Journals

1. **Kuess P**, Birkfellner W, Enghardt W, Helmbrecht S, Fiedler F, Georg D (2012) "Using statistical measures for automated comparison of in-beam PET data", *Medical Physics*, 39:10, 5874-5881 DOI:10.1118/1.4749962 (*IF=3.177*)
2. **Kuess P**, Helmbrecht S, Fiedler F, Birkfellner W, Enghardt W, Hopfgartner J, Georg D (2013) "Automated evaluation of setup errors in carbon ion therapy using PET: Feasibility study", *Medical Physics*, 40:12, 121718 DOI:10.1118/1.4829595 (*IF=3.177*)
3. **Kuess P**, Georg D, Palmans H, Lechner W (2016) "Technical Note: On the impact of the incident electron beam energy on the primary dose component of flattening filter free photon beams", *Medical Physics*, 43:8, 4954849 DOI:10.1118/1.4954849 (*IF=3.177*)
4. **Kuess P**, Andrzejewski P, Nilsson D, Georg P, Knoth J, Susani M, Trygg J, Helbich TH, Polanec S, Georg D, Nyholm T (2017) "Association between pathology and texture features of multi parametric MRI of the prostate", *Physics Medicine and Biology*, 62:19, 7833-7854 DOI: 10.1088/1361-6560/aa884d. (*IF=3.030*)
5. **Kuess P**, Böhlen T, Lechner W, Elia A, Georg D, Palmans H (2017) "Lateral response heterogeneity of Bragg peak ionization chambers for narrow-beam photon and proton dosimetry", *Physics Medicine and Biology* 62:24, 9189-9206 DOI: 10.1088/1361-6560/aa955e (*IF=3.030*)
6. Khachonkham S, Dreindl R, Heilemann G, Fuchs H, Lechner W, Georg D, **Kuess P** (2018) "Characteristic of EBT-XD and EBT3 radiochromic film dosimetry for photon and proton beams", *Physics Medicine and Biology* 63(6):065007 DOI: 10.1088/1361-6560/aab1ee (*IF=3.030*)
7. **Kuess P**, Boehlen T, Lechner W, Elia A, Georg D, Palmans H (2019) "Reply to Comment on 'Lateral response heterogeneity of Bragg peak ionization chambers for narrow-beam photon and proton dosimetry'", *Phys Med Biol.* 64(19):198022 DOI: 10.1088/1361-6560/ab3ba0 (*IF=3.030*)
8. Fetty L, Loefstedt T, Furtado H, Heilemann G, Nesvacil N, Nyholm T, Georg D, **Kuess P** (2020) "Investigating conditional GAN performance with different generator architectures and an ensemble model for improved MR-sCT conversion", *Phys Med Biol.* *in press* DOI: 10.1088/1361-6560/ab857b (*IF=3.030*)

First/Last Author in Standard Journals

1. **Kuess P**, Bozsaky E, Hopfgartner J, Seifritz G, Dörr W, Georg D (2014) “Dosimetric challenges of small animal irradiation with a commercial X-ray unit”, *Zeitschrift für Medizinische Physik*, 24:4, 363-372 DOI:10.1016/j.zemedi.2014.08.005 (IF=2.322)
2. Helmbrecht S, **Kuess P**, Birkfellner W, Enghardt W, Stützer K, Georg D, Fiedler F (2015) “Systematic analysis on the achievable accuracy of PT-PET through automated evaluation techniques”, *Zeitschrift für Medizinische Physik*, 25:2, 146-155 DOI:10.1016/j.zemedi.2014.08.004 (IF=2.322) ¹

Co-Author in Top Journals

1. Helmbrecht S, Santiago A, Enghardt W, **Kuess P**, Fiedler F (2012) “On the feasibility of automatic detection of range deviations from in-beam PET data”, *Physics in Medicine and Biology*, 57:5, 1387-1397 DOI:10.1088/0031-9155/57/5/1387 (IF=3.030)
2. Georg D, Hopfgartner J, Gora J, **Kuess P**, Kragl G, Berger D, Hegazy N, Goldner G, Georg P (2014) “Dosimetric considerations to determine the optimal technique for localized prostate cancer among external photon, proton, or carbon-ion therapy and high-dose-rate or low-dose-rate brachytherapy”, *International Journal of Radiation Oncology Biology Physics*, 88:3, 715-722 DOI:10.1016/j.ijrobp.2013.11.241 (IF=6.203)
3. Andrzejewski P, **Kuess P**, Knäusl B, Pinker K, Georg P, Knoth J, Berger D, Kirisits C, Goldner G, Helbich T, Pötter R, Georg D (2015) “Feasibility of dominant intraprostatic lesion boosting using advanced photon-, proton- or brachytherapy”, *Radiotherapy and Oncology*, 117:3, 509-514 DOI:10.1016/j.radonc.2015.07.028 (IF=5.252)
4. Linke M, Pham HT, Katholnig K, Schnöler T, Miller A, Demel F, Schütz B, Rosner M, Kovacic B, Sukhbaatar N, Niederreiter B, Blüml S, **Kuess P**, Sexl V, Müller M, Mukula M, Weckwerth W, Hascemi A, Susani M, Hengstschläger M, Gambello MJ, Weichhart T (2017) “Chronic signaling via the metabolic checkpoint kinase mTORC1 induces macrophage granuloma formation and marks sarcoidosis progression”, *Nature Immunology*, 18:3, 293-302 DOI: 10.1038/ni.3655 (IF=23.530)
5. Lechner W, **Kuess P**, Georg D, Palmans H (2017) “Equivalent square (uniform) field sizes of flattening filter free photon beams”, *Physics Medicine and Biology*, 62:19, 7694-7713 DOI: 10.1088/1361-6560/aa83f5 (IF=3.030)
6. Kostiukhina N, Georg D, Rollet S, **Kuess P**, Sipaj A, Andrzejewski P, Furtado H, Steiner E, Rausch I, Kertesz H, Lechner W, Knäusl B (2017) “Advanced Radiation Dosimetry System (ARDOS) - A novel breathing phantom for adaptive radiation therapy”, *Physics Medicine and Biology*, 62:20, 8136-8153 DOI: 10.1088/1361-6560/aa86ea (IF=3.030)

¹Shared First Authorship

7. Khan M, Heileman G, **Kuess P**, Georg D, Berg A (2018) "The impact of the oxygen scavenger on the dose-rate dependence and dose sensitivity of MAGIC type polymer gels", *Physics Medicine and Biology* 63(6):06NT01 DOI: 10.1088/1361-6560/aab00b (IF=3.030)
8. Garpebring A, Brynolfsson P, **Kuess P**, Georg D, Helbich T, Nyholm T, Lofstedt T (2018) "Density Estimation of Grey-Level Co-Occurrence Matrices for Image Texture Analysis", *Physics Medicine and Biology* 63(19):195017 DOI:10.1088/1361-6560/aad8ec (IF=3.030)
9. Padilla-Cabal F, **Kuess P**, Georg D, Palmans H, Fetty L, Fuchs H (2019) "Characterization of EBT3 radiochromic films for dosimetry of proton beams in the presence of magnetic fields", *Medical Physics* 46(7):3278-3284 DOI: 10.1002/mp.13567 (IF=3.177)
10. Kowaliuk J, Sarsarshahi S, Hlawatsch J, Kastsova A, Kowaliuk M, Krischak A, **Kuess P**, Duong L, Dörr W (2020) "Translational aspects of Nuclear Factor - kappa B and its modulation by thalidomide on early and late radiation sequelae in urinary bladder dysfunction", *International Journal of Radiation Oncology Biology Physics* *in press* DOI: 10.1016/j.ijrobp.2020.01.028 (IF=6.203)
11. Mara E, Clausen M, Khachonkham S, Deycmar S, Pessy C, Dörr W, **Kuess P**, Georg D, Gruber S (2020) "Investigating the impact of alpha/beta and LET on relative biological effectiveness in scanned proton beams: an in vitro study in human cell lines", *Medical Physics* *in press* (IF=3.177)

Co-Author in Standard Journals

1. Gora J, Hopfgartner J, **Kuess P**, Paskeviciute B, Georg D (2013) "Is there room for combined modality treatments? Dosimetric comparison of boost strategies for advanced head and neck and prostate cancer", *Journal of Radiation Research*, 54:SUPPL.1, i97-i112 DOI:10.1093/jrr/rrt067 (IF=1.691)
2. Gora J, **Kuess P**, Stock M, Andrzejewski P, Knäusl B, Paskeviciute B, Altorjai G, Georg D (2015) "ART for head and neck patients: On the difference between VMAT and IMPT", *Acta Oncologica*, 54:8, 1166-1174 DOI:10.3109/0284186X.2015.1028590 (IF=3.298)
3. Walsh S, Roelofs E, **Kuess P**, Lambin P, Jones B, Georg D, Verhaegen F (2016) "A validated tumor control probability model based on a meta-analysis of low, intermediate, and high-risk prostate cancer patients treated by photon, proton, or carbon-ion radiotherapy", *Medical Physics*, 43:2, 734-747 DOI:10.1118/1.4939260 (IF=3.177)
4. Frings K, Gruber S, **Kuess P**, Kleiter M, Dörr W (2016) "Modulation of radiation-induced oral mucositis by thalidomide: Preclinical studies", *Strahlentherapie und Onkologie*, 192:8, 561-568 DOI:10.1007/s00066-016-0989-5 (IF=2.717)

5. Walsh S, Roelofs E, **Kuess P**, van Wijk Y, Vanneste B, Dekker A, Lambin P, Jones B, Georg D, Verhaegen F (2018) "Towards a clinical decision support system for external beam radiation oncology prostate cancer patients: proton vs photon radiotherapy? A radiobiological study of robustness and stability", *Cancers*, 10(2), 55 DOI: 10.3390/cancers10020055 (*IF*=6.162)
6. Stock M, Georg D, Ableitinger A, Zechner A, Utz A, Mumot M, Kragl G, Gora J, Böhlen T, Grevillot L, **Kuess P**, Steininger P, Deutschmann H, Vatnitsky S (2018) "The technological basis for adaptive ion beam therapy at MedAustron: Status and Outlook", *Zeitschrift für Medizinische Physik*, 28(3): 196-210 DOI: 10.1016/j.zemedi.2017.09.007 (*IF*=2.322)
7. Gruber S, Bozsaky E, Frings K, **Kuess P**, Dörr W (2018) "Protective effects of systemic dermatan sulfate treatment in a preclinical model of radiation-induced oral mucositis", *Strahlentherapie und Onkologie* 194(7):675-685 DOI: 10.1007/s00066-018-1280-8 (*IF*=2.717)
8. Kowaliuk M, Bozsaky E, Gruber S, **Kuess P**, Dörr W (2018) "Systemic administration of heparin ameliorates radiation-induced oral mucositis-preclinical studies in mice", *Strahlentherapie und Onkologie* 194(7):686-692 DOI: 10.1007/s00066-018-1300-8 (*IF*=2.717)
9. Gruber S, Cini N, Kowald L, Mayer J, Rohorzka A, **Kuess P**, Dörr W (2018) "Upregulated epithelial junction expression represents a novel parameter of the epithelial radiation response to fractionated irradiation in oral mucosa", *Strahlentherapie und Onkologie in press* DOI:10.1007/s00066-018-1302-6 (*IF*=2.717)
10. Gruber S, Arnold M, Cini N, Gernedl V, Hetzendorfer S, Kowald L, **Kuess P**, Mayer J, Morava S, Pfaffinger S, Rohorzka A, Dörr W (2018) "Radioprotective Effects of Dermatan Sulfate in a Preclinical Model of Oral Mucositis-Targeting Inflammation, Hypoxia and Junction Proteins without Stimulating Proliferation", *International Journal of Molecular Sciences* 19(6) E1684 DOI:10.3390/ijms19061684 *IF*=4.183
11. Daniel M, **Kuess P**, Andrzejewski P, Nyholm T, Dragschitz F, Goldner G, Georg D, Polanec S, Baltzer P (2019) "Impact of androgen deprivation therapy on apparent diffusion coefficient and T2w MRI for histogram and texture analysis with respect to focal radiotherapy of prostate cancer", *Strahlentherapie und Onkologie* 195(5):402-411 DOI: 10.1007/s00066-018-1402-3 (*IF*=2.717)
12. Kowaliuk M, Schröder I, **Kuess P**, Dörr W (2019) "Heparin treatment mitigates radiation-induced oral mucositis in mice by interplaying with repopulation processes", *Strahlentherapie und Onkologie* 195(6):534-543 DOI: 10.1007/s00066-018-01423-4 (*IF*=2.717)
13. Sarsarshahi S, Madjd Z, Bozsaky E, Kowaliuk J, **Kuess P**, Ghahremani MH, Dörr W (2019) "An evaluation of the effect of bortezomib on radiation-induced urinary bladder dysfunction", *Strahlentherapie und Onkologie* 195(10): 934-939 DOI: 10.1007/s00066-019-01497-8 (*IF*=2.717)

14. Clausen M, Khachonkham S, Gruber S, **Kuess P**, Seemann R, Knäusl B, Palmans H, Dörr W, Georg D (2019) "Phantom design and dosimetric characterization for multiple simultaneous cell irradiations with active pencil beam scanning", *Radiation and Environmental Biophysics* 58(4): 563-573 DOI: 10.1007/s00411-019-00813-1 *IF=1.582*
15. Fetty L, Bylund M, **Kuess P**, Heilemann G, Nyholm T, Georg D, Loefstedt T (2020) "Latent Space Manipulation for High-resolution Medical Image Synthesis via the StyleGAN", *Zeitschrift Medizinische Physik (in press)* (*IF=2.322*)

Submitted Manuscripts

Fetty L, Buschmann M, Herrmann H, Heilemann G, **Kuess P**, Nyholm T, Georg D, Nesvacil N (2020) "An MR-only acquisition and artificial intelligence based image-processing protocol for photon and proton therapy using a low field MR ", *submitted to Zeitschrift Medizinische Physik*

Kuess P, Haupt S, Osorio J, Grevillot L, Fuchs H, Georg D, Palmans H (2020) "Characterization of a 147 mm diameter large-area ionization chamber for use in light-ion beams", *submitted to Physics Medicine and Biology*

Osorio J, Dreindl R, Grevillot L, Letellier V, **Kuess P**, Carlino A, Elia A, Stock M, Vatnitsky S, Palmans H (2020) "Beam monitor calibration for proton and carbon ion scanning beams in a synchrotron based facility - MedAustron experience", *submitted to Zeitschrift Medizinische Physik*

Khachonkham S, Mara E, Gruber S, Preuer R, **Kuess P**, Dörr W (2020) "RBE variation in prostate carcinoma cells in active scanning proton beams: in-vitro measurements in comparison with phenomenological models" *submitted*

Fuchs H, Elia A, Resch AF, **Kuess P**, Lühr A, Vidal M, Grevillot L, Georg D (2020) "Computer assisted beam modeling for particle therapy" *submitted to Medical Physics*

Oral conference contributions

Characterization of a prototype plane-parallel ionization chamber with 147 mm diameter, Alpe-Adria Medical Physics Meeting, Graz, Austria, May 2019 (presented by co-author)

Imaging dose burden for head and pelvic patients utilizing the ImagingRing system, ÖGMP Tagung, Vienna, Austria, June 2018

Lateral response heterogeneity of Bragg peak ion chambers for narrow-beam photon & proton dosimetry, ESTRO 36, Vienna, Austria, April 2017

Association between pathology and texture features of multi parametric MRI of the prostate, ESTRO 35, Turin, Italy, April 2016

Systematic analysis on the achievable precision of Particle Therapy-PET measurements for 12C-beams by means of automated evaluation techniques, 6th Alpe-Adria Medical Physics Meeting, Budapest, Hungary, May 2014

Dosimetric considerations to determine the optimal technique for localized prostate cancer (young scientists poster discussion), ESTRO 33, Vienna, Austria, April 2014

Dosimetric considerations to determine the optimal technique for localized prostate cancer, ICTR-PHE, Geneva, Switzerland, February 2014

Automated detection of setup errors in carbon ion therapy using particle therapy PET: feasibility study", ÖGMP Annual Meeting, Innsbruck, Austria, Mai, 2013

Automated detection of setup errors in carbon ion therapy using particle therapy PET: feasibility study, (poster discussion) ESTRO 32, Geneva, Switzerland, April 2013

An automated approach for the comparison of PET data for ion beam therapy verification, 5th Alpe-Adria Medical Physics Meeting, Trieste, Italy, May 2012

Automated detection of ion beam modifications in in-beam PET images, Radioactive Isotopes in Clinical Medicine and Research, Bad Hofgastein, Austria, January 2012

Automatische Detektion von Änderungen der Strahlreichweite bei in-beam PET Daten, 3 Ländertagung der ÖGMP, DGMP und SGSMP, Vienna, Austria, September 2011

Poster contributions

ESTRO 37, Barcelona, Spain, May 2018

PTCOG 55, Prague, Czech Republic, May 2016

ULICE final meeting and ENLIGHT annual meeting, Wiener Neustadt, Austria, July 2013

9th YSA-PhD-Symposium, Vienna, Austria, June 2013

PTCOG 52, Essen, Germany, June 2013

ESTRO 32, Geneva, Switzerland, April 2013

MedAustron Symposium, Wiener Neustadt, Austria, November 2012

8th YSA-PhD-Symposium, Vienna, Austria, June 2012

ESTRO 31, Barcelona, Spain, May 2012

ENVISION Mid Term Review Meeting, Ciudad Real, Spain, April 2012

ICTR-PHE, Geneva, Switzerland, March 2012

Awards

Alpe-Adria Working Community Price Instituted on the occasion of the 6th Alpe-Adria Medical Physics Meeting in Budapest, Hungary, May 2014

RESEARCH ACTIVITIES

Dosimetry: Photons (kV and MV), Protons, and Carbon ions

Image Processing: Radiomics, Textural Analysis, Deep Learning

Image Guided Radiotherapy: Multimodal Imaging, Adaptive Radiotherapy, MRI in Radiotherapy

Small Animal Research

CLINICAL ACTIVITIES

Quality assurance

Periodic checks of linear accelerators and imaging units for IGRT

Commissioning and periodic checks of imaging units for particle therapy

Commissioning of dosimetric equipment for particle therapy

Commissioning of multi-parametric MRI sequences for clinical protocols

Maintenance and trainings of X-ray units for pre-clinical research for MedUni and external users

SKILLS

Languages	German (native) English (fluently spoken and written)
Computer	Various Treatment Planning Systems and Medical Imaging Software Various Programming Languages and Office Software
Administration	Excellent management skills Study coordination assistance for the EC project ENVISION and the Christian Doppler Laboratory for Medical Radiation Research for Radiation Oncology Research coordination assistance between the Department of Radiation Oncology (MedUni Wien) and EBG MedAustron

TEACHING ACTIVITIES

In parenthesis SWS of own contribution

MUW PhD Programme

SS2015	Doctoral Students Seminar: Radiation Physics Applications in Radiation Oncology 2 SWS (1)
WS2015	Doctoral Students Seminar: Ion Beam Therapy - General Concepts and Recent Developments 2 SWS (0.5)
SS2016	Basic Seminar: Medical Physics VIII - Physical Fundamentals of Radiation Oncology 2 SWS (0.66)
SS2018	Doctoral Students Seminar: Radiation Physics Applications in Radiation Oncology 2 SWS (0.75)
WS2018	Doctoral Students Seminar: Ion Beam Therapy 2 SWS (0.5)

MUW Medical Degree Programme

SS2016	BL 18 - Haut und Sinnesorgane 0.8 SWS (0.67)
WS2016	BL 3 - Vom Molekül zur Zelle 1.73 SWS (1.07)

SS2017	BL 18 - Haut und Sinnesorgane 0.8 SWS (0.67)
WS2017	BL 3 - Vom Molekül zur Zelle 1.73 SWS (1.07)
SS2018	BL 18 - Haut und Sinnesorgane 0.8 SWS (0.67)
WS2018	BL 3 - Vom Molekül zur Zelle 1.73 SWS (1.07)
SS2019	BL 18 - Haut und Sinnesorgane 0.8 SWS (0.67)
WS2019	BL 3 - Vom Molekül zur Zelle 1.73 SWS (1.07)

MUW Postgraduate Course Medical Physics

WS2015	Practical Training in Medical Radiation Physics I
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Supervised Students

M.Sc. Thesis

Current:

Viktoria Moser	<i>"Large area ionization chamber - StingRay - for particle therapy"</i> TU Vienna
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Completed:

Sarah Haupt	<i>"Dose area product measurements with a novel large area ionization chamber in scanned proton beams"</i> TU Vienna (05/2019)
Niklas Reisz	<i>"Modelling of the head scatter of the ImagingRing System"</i> TU Vienna (06/2018)
Merim Cato	<i>"Development of a Monte Carlo simulation to predict the beta plus activity distribution in a patient during particle therapy"</i> TU Vienna (01/2018)
Anna Huber	<i>"Dosimetrical consideration using the Imaging Ring at MedAustron"</i> FH Wiener Neustadt (05/2017)
Hunor Kertesz	<i>"ARDOS Phantom: Research applications including further developments"</i> FH Wiener Neustadt (10/2016)
Anton Eschli	<i>"Investigations on suitable MR marker for an MRI only workflow"</i> FH Technikum Wien (05/2016)
Lukas Gnam	<i>"Monte Carlo based dose calculation for an X-Irradiator in pre-clinical research"</i> TU Vienna (01/2016)

Gerhard Seifritz *“Dosimetrie im niederenergetischen Röntgenbereich im Rahmen der Inbetriebnahme einer Tierbestrahlungsanlage”*
Postgraduate M.Sc. Course on Medical Physics MUW (05/2015)

Bachelor’s Thesis

Completed:

Patricia Platzer *“Range measurements for carbon ions in water ? Support during Commissioning Shifts at MedAustron”* FH Campus Wien (10/2019)

Katrin Munzenrieder *“Usage of textural feature analysis on medical images using the software MICE”*
FH Technikum (05/2017) – co-supervision with Univ.-Prof. Dietmar Georg

Georg Maier *“Commissioning and QA of a breathing phantom for the usage in Radiotherapy”*
TU Vienna (04/2016) – co-supervision with Univ.-Prof. Dietmar Geor

MISCELLANEOUS

Memberships

ÖGMP, ESTRO

Reviewer and Examination Activities

Physics in Medicine and Biology

Zeitschrift für Medizinische Physik

Biomedical Physics and Engineering Express (BPEX)

Radiotherapy and Oncology

Nuclear Inst. and Methods in Physics Research, B

Physica Medica

PhD Examiner: University of Melbourne