

CURRICULUM VITAE

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PART I: General Information

Name: MATTHEW R. PALMER

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Place of Birth: Montreal, Canada

Education:

1981	B.A.SC., UNIVERSITY OF BRITISH COLUMBIA, CANADA
1985	M.A.SC., UNIVERSITY OF BRITISH COLUMBIA, CANADA
1990	PH.D., MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Licensure and Certification:

2007	American Board of Radiology, Medical Nuclear Physics
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Academic Appointments:

1990-1991	Assistant Professor, Memorial University of Newfoundland, St. John's, Canada
1991-1996	Assistant Professor, University of British Columbia, Vancouver, Canada
1998-2007	Instructor in Radiology, Harvard Medical School, Boston, MA
2007-present	Assistant Professor of Radiology, Harvard Medical School, Boston, MA

Hospital or Affiliated Institution Appointments:

01/98-12/06	Visiting Scientist, Massachusetts Institute of Technology, Cambridge, MA
01/98-present	Scientist, Beth Israel Deaconess Medical Center, Boston, MA
03/01-present	Co-Director, Optical Imaging Laboratory, Department of Radiology, Beth Israel Deaconess Medical Center, Boston, MA
01/05-present	Faculty Member, Joint Program in Nuclear Medicine, HMS.

Other Professional Positions and Major Visiting Appointments:

- 1981-1983 Scientific Engineer, University of British Columbia, Vancouver, Canada
- 1985-1986 Research Engineer, UBC/TRIUMF Program on Positron Emission Tomography, Vancouver, Canada

Hospital and Health Care Organization Clinical Service Responsibilities:

- 2004-present Physicist, Nuclear Medicine, Beth Israel Deaconess Medical Center

Major Committee Assignments:

- 1998-2000 Standards Committee, Member, International Society for Neutron Capture Therapy
- 2003-2005 PACS Committee, Ad-Hoc Member, Beth Israel Deaconess Medical Center
- 2003-present Radiation Safety Committee, Member, Beth Israel Deaconess Medical Center
- 2006-present Physics in Radiology, Member, American Association of Physicists in Medicine

Professional Societies:

- 1975-present Institute of Electrical and Electronic Engineers (IEEE), Member
- 1999-present American Association of Physicists in Medicine (AAPM), Member
- 2004-present Society of Nuclear Medicine (SNM), Member

Community Service Related to Professional Work:

- 1992 Reviewer, Medical Research Council of Canada
- 1995-1996 Reviewer, Natural Sciences and Engineering Research Council of Canada
- 1999-2001 Reviewer, Office of Science, US Department of Energy
- 2007 Reviewer, National Electrical Manufacturers Association

Editorial Boards:

- 1994-1996 Ad-Hoc Reviewer, Journal of Mathematical Physics
- 1995-1996 Ad-Hoc Reviewer, Society of Photo-Optical Instrumentation Engineers
- 1998-present Ad-Hoc Reviewer, Medical Physics
- 2001-2003 Ad-Hoc Reviewer, Radiation Research
- 2002-2003 Ad-Hoc Reviewer, International Journal of Radiation Oncology, Biology, Physics
- 2006-present Ad-Hoc Reviewer, IEEE Transactions on Nuclear Science

Awards and Honors:

1976	Centenary of Responsible Government Award, Memorial University of Newfoundland
1977	Centenary of Responsible Government Award, Memorial University of Newfoundland
1978	Undergraduate Research Award, Memorial University of Newfoundland
1980	Don Carpenter IEEE Award, University of British Columbia
1987	Acoustics, Speech and Signal Processing Paper Award, Institute of Electrical and Electronic Engineers
1989	Poitras Predoctoral Fellowship, Massachusetts Institute Of Technology
1992	New Faculty Award, British Columbia Advanced Systems Institute
2005	Mentee Xuping Zhu awarded First Prize, Society of Nuclear Medicine, Young Professionals Committee
2007	Mentee Matthias Werner awarded Best Clinical Paper, Society of Nuclear Medicine, Young Professionals Committee

Part III: Bibliography

Original Articles

1. **Palmer MR**, Bergstrom M, Beddoes MP, Pate BD. Effects of detector wobble motion on image noise in positron emission tomography. *IEEE Trans Med Imaging*. 1985;4(1):58-62.
2. Clark JJ, **Palmer MR**, Lawrence PD. A transformation method for the reconstruction of bandlimited functions from nonuniformly spaced samples. *IEEE Trans Acoust Speech Signal Processing*. 1985;ASSP-33(5):1151-1165.
3. **Palmer MR**, Bergstrom M, Pate BD, Beddoes MP. Noise distribution due to emission and transmission statistics in positron emission tomography. *IEEE Trans Nucl Sci*. 1986;NS-33(1):439-442.
4. **Palmer MR**, Rogers JG, Bergstrom M, Pate BD, Beddoes MP. Transmission profile filtering for positron emission tomography. *IEEE Trans Nucl Sci*. 1986;NS-33(1):478-481.
5. Chan B, Bergström M, **Palmer MR**, Sayre C, Pate BD. Scatter distribution in transmission measurements with positron emission tomography. *J Comput Assist Tomogr*. 1986;10(2):296-301.
6. Honer WG, Hurwitz T, Li DKB, **Palmer M**, Kastrukoff LF, Oger J, Paty DW. Temporal lobe involvement in multiple sclerosis patients with psychiatric disorders. *Arch Neurol*. 1987;44:187-190.
7. Isaac C, Li DKB, Genton M, Jardine C, Grochowski E, **Palmer M**, Kastrukoff LF, Oger J, Paty DW. Multiple sclerosis: A serial study using MRI in relapsing patients. *Neurology*. 1988;38(10):1511-1515.
8. Brownell GL, Burnham CA, Stearns CW, Chesler DA, Brownell A-L, **Palmer MR**. Developments in high resolution positron emission tomography at MGH. *Intl J*

Imaging Sys Tech. 1989;1(1):207-217.

9. Martin WR, **Palmer MR**, Patlak CS, Calne DB. Nigrostriatal function in humans studied with positron emission tomography. *Ann Neurol*. 1989;26(4):535-42.
10. Kastrukoff LF, Oger JJ, Hashimoto SA, Sacks SL, Li DK, **Palmer MR**, Koopmans RA, Petkau AJ, Berkowitz J, Paty DW. Systemic lymphoblastoid interferon therapy in chronic progressive multiple sclerosis. I. Clinical and MRI evaluation. *Neurology*. 1990;40(3 Pt 1):479-86.
11. **Palmer MR**, Brownell GL. Annihilation density distribution calculations for medically important positron emitters. *IEEE Trans Medical Imaging*. 1992;11(3):373-378.
12. Koopmans RA, Li DK, Redekop WK, Zhao GJ, **Palmer MR**, Kastrukoff LF, Paty DW. The use of magnetic resonance imaging in monitoring interferon therapy of multiple sclerosis. *J Neuroimaging*. 1993;3(3):163-8.
13. **Palmer MR**, Donnelly R. Focussed waves and the scalar wave equation. *J Math Phys*. 1993;34(9):4007-4013.
14. Kiger WS, **Palmer MR**, Riley KJ, Zamenhof RG, Busse PM. A pharmacokinetic model for the concentration of ¹⁰B in blood after boronophenylalanine-fructose administration in humans. *Radiat Res*. 2001;155(4):611-8.
15. Santa Cruz GA, **Palmer MR**, Matatagui E, Zamenhof RG. A theoretical model for event statistics in microdosimetry. I: Uniform distribution of heavy ion tracks. *Med Phys*. 2001;28(6):988-96.
16. Santa Cruz GA, **Palmer MR**, Matatagui E, Zamenhof RG. A theoretical model for event statistics in microdosimetry. II: Nonuniform distribution of heavy ion tracks. *Med Phys*. 2001;28(6):997-1005.
17. White SM, Held KD, **Palmer MR**, Yanch JC. Biological dosimetry for epidermal neutron beams. *Radiat Res*. 2001;155(6):778-84.
18. Santa Cruz GA, **Palmer MR**, Matatagui E, Zamenhof RG. A theoretical model for the microdosimetry of discontinuous distributions of heavy particle tracks. *Radiat Prot Dosimetry*. 2002;99(1-4):429-31.
19. **Palmer MR**, Goorley JT, Kiger WS, Busse PM, Riley KJ, Harling OK, Zamenhof RG. Treatment planning and dosimetry for the Harvard-MIT Phase I clinical trial of cranial neutron capture therapy. *Int J Radiat Oncol Biol Phys*. 2002;53(5):1361-79.
20. Busse PM, Harling OK, **Palmer MR**, Kiger WS, Kaplan J, Kaplan I, Chuang CF, Goorley JT, Riley KJ, Newton TH, Santa Cruz GA, Lu XQ, Zamenhof RG. A critical examination of the results from the Harvard-MIT NCT program phase I clinical trial of neutron capture therapy for intracranial disease. *J Neurooncol*. 2003;62(1-2):111-21.
21. Kiger WS, **Palmer MR**, Riley KJ, Zamenhof RG, Busse PM. Pharmacokinetic modeling for boronophenylalanine-fructose mediated neutron capture therapy: ¹⁰B concentration predictions and dosimetric consequences. *J Neurooncol*. 2003;62(1-2):171-86.
22. Kiger WS, Albritton JR, Lu XQ, **Palmer MR**. Development and application of an unconstrained technique for patient positioning in fixed radiation beams. *Appl*

- Radiat Isot. 2004;61(5):765-9.
23. Kiger WS, Lu XQ, Harling OK, Riley KJ, Binns PJ, Kaplan J, Patel H, Zamenhof RG, Shibata Y, Kaplan ID, Busse PM, **Palmer MR**. Preliminary treatment planning and dosimetry for a clinical trial of neutron capture therapy using a fission converter epithermal neutron beam. *Appl Radiat Isot.* 2004;61(5):1075-81.
 24. Shibata Y, Kruskal JB, **Palmer MR**. Imaging of cerebrospinal fluid space and movement in mice using near infrared fluorescence. *J Neurosci Methods.* 2005;147(2):82-7.
 25. **Palmer MR**, Zhu Z, Parker JA. Modeling and simulation of positron range effects for high resolution PET imaging. *IEEE Trans Nucl Sci.* 2005;52(5):1391-1395.
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 28. Fahey FH, **Palmer MR**, Strauss K, Zimmerman RE, Badawi R, Treves ST. Dosimetry and adequacy of CT-based attenuation correction for pediatric PET. *Radiology.* 2007;243(1):96-104.
 29. Shibata Y, Kruskal JB, **Palmer MR**. Imaging of cerebrospinal fluid space and movement of hydrocephalic mice using near infrared fluorescence. *Neurol Sci.* 2007;28:87-92.
 30. Schultz MK, Cessna JT, Anderson TL, Ponto JA, Petry N, Kowalsky RJ, **Palmer MR**, Beinlich UF, Baker W, Hinkle GH, Hung JC, Quinton T, Rice PA, Divgi C, Norenberg JP. A performance evaluation of Y-90 dose calibrator measurements in nuclear pharmacies and clinics in the United States. *Appl Radiat Isotopes.* 2007;(Sept 18, epub).
 31. Barbaras L, **Palmer MR**, Parker JA, Kolodny GM. A shareware program for nuclear medicine PACS including fused PET/CT display. *Am J Roentgenol.* 2007;188:(6):565-568 .

Proceedings of Meetings

1. Mason SE, Birch GE, Tajwar S, **Palmer MR**. The space-time characteristics of brain potentials related to single voluntary movements. In: *Proceedings of the IEEE Sixth SSAP Workshop on Statistical Signal and Array Processing*; Victoria, BC, Canada; 1992. p. 322-325.
2. Allexandre D, **Palmer MR**. Limited diffraction beams from cylindrical arrays. In: *Proceedings of the 1996 IEEE Ultrasonics Symposium*; 1996. p. 1577-1580.
3. **Palmer MR**, Parker JA. High resolution imaging with positron emitters: Modeling range blurring effects. In: *Proceedings of the IEEE Nuclear Science Symposium and Medical Imaging Conference*; Rome, Italy; 2004, p. 2682-2685.
4. Zhu X, Parker JA, **Palmer MR**. Recovery coefficient in PET as a function of object

size and respiratory motion trajectory. In: Proceedings of the IEEE Nuclear Science Symposium and Medical Imaging Conference; Puerto Rico; 2005, p. 2170-2172.

Reviews/Chapters/Editorials

1. Martin WRW, Stoessl AJ, **Palmer M**, Adam MJ, Ruth TJ, Grierson JR, Pate BC, Calne DB. PET scanning in dystonia. In: Fahn S, Calne DB and Marsden CD, eds, *Advances in Neurology*. Raven Press; 1988. p. 223-236.
2. **Palmer MR**. Localized waves and limited diffraction beams. In: T.W. Barrett ed., *Advanced Electromagnetism: Foundations, Theory and Applications*. World Scientific Publishing Co.; 1995. p. 667-681.
3. **Palmer MR**, Chuang C, Kiger WS, Busse PM, Zamenhof RG. Predicting Boron-10 concentrations in normal brain and glioblastoma from blood measurements. In: MF Hawthorne and K Shelly, eds., *Frontiers in Neutron Capture Therapy*. Plenum Publishers; 2001. p. 243-247.
4. **Palmer MR**, Kiger WS, Zuo C, Panych LP, Guttmann CRC, Zamenhof RG, Busse, PM. Integrated medical image registration, patient positioning and patient monitoring for cranial BNCT. In: MF Hawthorne and K Shelly, eds., *Frontiers in Neutron Capture Therapy*. Plenum Publishers; 2001. p. 195-199.
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9. Chuang C, **Palmer M**, Zamenhof R, Busse P. Time-dependent biodistribution of BPA-f in normal and tumor brain tissues in mice. In: M. Fredrick Hawthorne and Kenneth Shelly, eds., *Frontiers in Neutron Capture Therapy*. Plenum Publishers; 2001. p. 965-971.
10. Zamenhof RG, **Palmer MR**, Busse PM. Clinical treatment planning for subjects undergoing boron neutron capture therapy at Harvard-MIT. In: *Current Status of Neutron Capture Therapy (IAEA TechDoc-1223)*. Vienna: International Atomic Energy Agency; 2001. p. 216-222.
11. **Palmer MR**, Shibata Y, Kruskal JB, Lenkinski RE. In vivo imaging of small

animals with optical tomography and near infrared fluorescent probes. Proceedings of the SPIE. 2002; 4626:166–169.

12. Fahey FH, **Palmer MR**. Positron emission tomography/computed tomography (PET/CT) scanners. In: E. Seera ed., *Computed Tomography: Physical Principles, Clinical Applications, and Quality Control*. Elsevier; 2007. p. (in press).

Thesis

1. **Palmer MR**. Noise Propagation in Quantitative Positron Emission Tomography (MAsc thesis). Vancouver, Canada: University of British Columbia;1986.
2. **Palmer MR**. Spatial Resolution in Positron Emission Tomography: The Fundamental Limits (Ph.D. dissertation). Cambridge, MA: Massachusetts Institute of Technology;1990.

Abstracts

1. **Palmer MR**, Fahey FH, Zimmerman RE, Badawi RD, Kolodny GM. Attenuation correction in PET/CT from low-dose CT: Removing statistical bias. *J Nucl Med*. 2005;46(suppl. 2):470P.
2. Werner MK, Parker JA, Kolodny GM, English JR, **Palmer MR**. The effect of respiratory gating on quantitative PET imaging in lung cancer. *J Nucl Med*. 2007;48(suppl. 2):76P..