

BIOGRAPHICAL SKETCH			
NAME Rebecca Fahrig, Ph.D.		POSITION TITLE Associate Professor of Radiology	
eRA COMMONS USER NAME FAHRIG.REBECCA			
EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
University of Toronto, Toronto, Canada	B.S.	1984-1989	Physics
University of Toronto, Toronto, Canada	M.S.	1989-1992	Medical Biophysics
University of Western Ontario, London, Ontario	Ph.D.	1995-1999	Medical Biophysics
Stanford University, Stanford, CA	Postdoc	1999-2002	Fellowship

A. Positions and Honors

Professional Experience

- 2002-Present Assistant Professor, Dept. of Radiology, Stanford University
- 1999-2001 Consultant, providing expertise on image distortion correction and system calibration techniques in the design and development of a system for computer-aided spine surgery. Dr. Ramin Shahidi, Image Guidance Labs, Stanford University.
- 2000-2001 Consultant, modeling of the mammography image acquisition chain; Investigating optimum acquisition parameters for new Csl-based detectors, R2 Technology Inc.
- 1998-2001 Consultant, modeling of the mammography image acquisition chain Investigating the scatter-rejection properties of novel anti-scatter grids, Creatv Microtech Inc.

Honors and Awards:

- 2006 Visualization Challenge Award: Best Photography, NSF and Science Magazine
- 2006 Greenfield award for best paper (non radiation dosimetry) published in Medical Physics in 2005.
- 2005 Fellowship Research Trainee Prize (Zhu, PhD candidate), RSNA 2005 Physics Subcommittee
- 2004 Faculty Scholar in Translational Research from the Baxter Foundation (\$75,000 in gift funds)
- 2001 Cum Laude Award, SCBT/MR, Miami, Florida 2001
- 2000 Fellowship Research Trainee Prize, RSNA 2000 Physics Subcommittee
- 1999 First Place, Young Investigator's Competition, AAPM Annual Meeting, Nashville, Tennessee
- 1999-2002 Post-doctoral Fellowship, Medical Research Council, Canada
- 1995-99 Heart and Stroke Foundation of Canada Research Traineeship & Graduate Scholarship UWO
- 1994 Summer Research Scholarship, University of Technology, Sydney

B. Selected peer-reviewed publications (past 5 years listed only.)

- Schmidt TG, **Fahrig R**, Pelc NJ, Solomon EG. "An inverse-geometry volumetric CT system with a large-area scanned source: a feasibility study." *Medical Physics*. 31(9):2623-7, 2004.
- Holdsworth, DW, Pollmann, S, Nikolov, H and **Fahrig, R**. "Correction of XR111 geometric distortion using a liquid-filled grid and image subtraction" *Medical Physics*, 2005 Jan;32(1):55-64
- Kee ST, Ganguly A, Daniel BL, Wen Z, Butts K, Shimikawa A, Pelc NJ, **Fahrig R**, Dake MD. "MR-guided transjugular intrahepatic portosystemic shunt creation with use of a hybrid radiography/MR system." *Journal of Vascular and Interventional Radiology*. 16(2 Pt 1):227-34, 2005.
- Rieke, V, Ganguly, A, Daniel, BL, Scott, GC, Pauly, JM, **Fahrig, R**, Pelc, NJ, Butts, K, "X-Ray Compatible Radiofrequency Coil for Magnetic Resonance Imaging." *Magnetic Resonance In Medicine*. 53(6):1409-14, 2005.
- Fahrig R**, Wen Z, Ganguly A, DeCrescenzo G, Rowlands JA, Stevens GM, Saunders RF, Pelc NJ "Performance of a static-anode/flat-panel x-ray fluoroscopy system in a diagnostic strength magnetic field: a truly hybrid x-ray/MR imaging system." *Medical Physics*. 32(6):1775-84, 2005.
- Yu H, **Fahrig R**, Pelc NJ "Co-registration of x-ray and MR fields of view in a hybrid XMR system." *Journal of Magnetic Resonance Imaging*. 22(2): 291-301, 2005.
- Ganguly A, Wen Z, Daniel BL, Butts K, Kee ST, Rieke V, Do HM, Pelc NJ, **Fahrig R**. "Truly Hybrid X-Ray/MR Imaging: Toward a Streamlined Clinical System." *Academic Radiology*. 12(9):1167-77, 2005.

8. Wen Z, **Fahrig R**, Pelc NJ. "Robust x-ray tubes for use within magnetic fields of MR scanners." *Medical Physics*. 32(7):2327-36, 2005.
9. Schmidt TG, **Fahrig R**, Pelc NJ. "A three-dimensional reconstruction algorithm for an inverse-geometry volumetric CT system." *Medical Physics*. 32(11):3234-45, 2005.
10. Sze DY, Strobel N, **Fahrig R**, Moore T, Busque S, Frisoli JK. "Transjugular Intrahepatic Portosystemic Shunt Creation in a Polycystic Liver Facilitated by Hybrid Cross-sectional/Angiographic Imaging." *Journal of Vascular and Interventional Radiology*. 17(4):711-5, 2006.
11. Schmidt TG, Star-Lack J, Bennett NR, Mazin SR, Solomon EG, **Fahrig R**, Pelc NJ. "A prototype table-top inverse-geometry volumetric CT system." *Medical Physics* 2006 Jun;33(6):1867-78.
12. Pineda AR, Yoon S, Paik DS, **Fahrig R**. "Optimization of Tomosynthesis System for Detection of Lung Nodules". *Medical Physics*. 33(5):1372-9, 2006.
13. Lauritsch, G, Boese, J, Wigström, L, Kemeth, H, and **Fahrig, R**. "Towards Cardiac C-Arm Computed Tomography." *IEEE Transactions on Medical Imaging* 25(7): 922-934, 2006.
14. Brozowski, L, Ganguly, A, Pop, M, Wen, Z, Bennett, R, **Fahrig, R**, and Rowlands, JA. "Compatibility of interventional x-ray and magnetic resonance imaging: Feasibility of a closed bore XMR (CBXMR) system." *Medical Physics* 33 (8): 3033-3045, 2006.
15. **Fahrig, R**, Dixon, R, Payne, T, Morin, RL, Ganguly, A, and Strobel, S. "Dose and Image Quality for a Cone-Beam C-arm CT System." *Medical Physics* 33(12), 4541-4550, 2006.
16. Zhu L, Bennett R, **Fahrig R**. "Scatter correction method for x-ray CT using primary modulation: Theory and preliminary results", *IEEE Trans Med Imag* 25(12):1573-1587, 2006.
17. Sommer G, Bouley D, Frisoli J, Pierce L, Sandner-Porkristl D, **Fahrig R**. "Determination of Three-Dimensional Zonal Renal Volumes Using Contrast-Enhanced CT.", *JCAT* 31(2), 209-213 (2007).
18. Wen Z, Pelc NJ, Nelson WR, **Fahrig R** "Study of increased radiation when an X-ray tube is Placed in a Strong Magnetic Field", *Medical Physics* 33(2) : 408-418, 2007.
19. Ganguly A, Gold GE, Butts Pauly K, Mayer D, Moseley MM, Pelc NJ, **Fahrig R**., "Quantitative evaluation of the relaxivity effects of iodine on GD-DTPA enhanced MR arthrography.", *J Magn Reson Imaging*. 2007 Jun;25(6):1219-25.
20. Z. Wen, **R. Fahrig**, S. Conolly and N.J. Pelc, "Investigation of electron trajectories of an x-ray tube in magnetic fields of MR scanners", *Medical Physics* 34 (6) : 2048-2058 (2007).
21. Zhu L, Yoon S and **Fahrig R** "A short-scan reconstruction for cone-beam CT using shift-invariant FBP and equal weighting", *Medical Physics* 34 (11) : 4422-38 (2007).
22. Freeman-Walsh CB, **Fahrig R**, Ganguly A, Rieke V, Daniel BL. "A hybrid radiography/MRI system for combining hysterosalpingography and MRI in infertility patients: initial experience." *AJR Am J Roentgenol*. 2008 Feb;190(2):W157-60.
23. **Fahrig, R**. Ganguly, A. Lillaney, P. Bracken, J. Rowlands, J.A. Zhifei Wen Huanzhou Yu Rieke, V. Santos, J.M. Pauly, K.B. Sze, D.Y. Frisoli, J.K. Daniel, B.L. Pelc, N.J. "Design, Performance, and Applications of a Hybrid X-Ray/MR System for Interventional Guidance" *Proceedings of the IEEE* 96 (3): 469-480 (2008).
24. H Arakawa, M.P. Marks, H.M. Do, N. Strobel, T. Moore, **R Fahrig**. "Experimental study of intracranial hematoma detection with Flat Panel Detector C-arm CT." *AJNR* 29 (4), 766-772, (2008).
25. A. Al-ahmad, L. Wigstrom, D. Sandner-Porkristl, P.J. Wang, P.C. Zei, J. Boese, G. Lauritsch, T. Moore, F. Chan and **R. Fahrig**. "Time-resolved three-dimensional imaging of the left atrium and pulmonary veins in the interventional suite – A comparison between C-arm CT and Multislice CT." *Heart Rhythm* 5 (4), 513-519, (2008).
26. Yoon S., Henry R.W., Bouley, D.M., Bennett, N.R., **Fahrig, R**. "Characterization of a novel anthropomorphic plastinated lung phantom." *Medical Physics*. 35(12):5934-43 (2008)
27. Zhu, L., Starman, J., **Fahrig, R**. "An Efficient Estimation Method for Reducing the Axial Intensity Drop in Circular Cone-Beam CT." *Int J Biomed Imaging*. 2008:242841 (2008)
28. Wen, Z., **Fahrig, R.**, Williams, S.T., Pelc, N.J. "Shimming with permanent magnets for the x-ray detector in a hybrid x-ray/ MR system." *Medical Physics*. 35(9):3895-902 (2008)
29. Bracken, J.A., Komljenovi, P., Lillaney, P.V., **Fahrig, R.**, Rowlands, J.A. "Closed-bore XMR (CBXMR) systems for aortic valve replacement: X-ray tube imaging performance". *Medical Physics* 36 (4): 1086-1097 (2009)
30. Girard-Hughes, E., Al-Ahmad, A., Moore, T., Lauritsch, G., Boese, J., **Fahrig, R**. "Visualization and enhancement patterns of radiofrequency ablation lesions with iodine contrast-enhanced cardiac C-arm CT". *Proc. SPIE*, Vol. 7262, 72621N (2009)

C. Research Support

ACTIVE

R01 CA112163-01 SIEWERDSEN (PI:UHN) FAHRIG (Subcontract) 09/08/2006-07/31/2009
NIH/NIBIB

Image Science for the New X-ray: Taking NEQ to Task

The main goal of this project is to develop new image quality metrics that can be used for imaging system design optimization.

R21 EB008186 (FAHRIG) 09/21/2007-08/31/2009
NIH/NIBIB

Efficient Scatter Correction

The main goal of this project is to develop a new, measurement-based scatter correction technique for use with conebeam CT, dual-detector CT and On-board CT for radiation therapy verification.

Siemens Medical Solutions (FAHRIG) 10/01/2007-09/30/2009

Cardiac Imaging using C-arm CT: EP registration and perfusion

The main goal of this project is to investigate new imaging techniques for retrospectively gated cardiac imaging using a flat-panel C-arm fluoroscopy system.

Siemens Medical Solutions (FAHRIG) 10/01/2007-09/30/2009

Perfusion Imaging Using C-arm CB

The main goal of this project is to investigate new imaging techniques for imaging brain perfusion using C-arm CT.

R01 EB007626 (FAHRIG) 04/01/2008-03/31/2011
NIH

MR-Compatible X-Ray Tube

The main goal of this project is to develop a new, MR-compatible rotating-anode x-ray tube that will operate in the fringe fields of 1.5T and 3.0T closed-bore clinical magnets.

R01 HL087917 (FAHRIG) 05/01/2009-04/30/2011
NIH

C-arm CT for Guidance of Cardiac Interventions

The goal of this proposal is to extend the capability of C-arm CT to acquire high-quality 3D volume sequence images of the beating heart in the interventional suite. New algorithms developed here will provide 3D and 4D images of the actual state of the patient at the time of intervention.

PENDING:

NIH/NCI 4/01/2009-03/31/2014

Dual kV/MV Imaging For Metal Artifact Reduction

The main goal of this project is to research and optimize a new MV detector for on-line imaging during therapy that, when combined with the standard kV imaging system will lead to a dramatic reduction in beam hardening artifact due to dental and hip implants.

PAR09028 [SPO#:45491] (FAHRIG) 04/01/2010-03/31/2011

NIH

Axiom zeego Shared Instrument Grant

The goal of this proposal is to procure Axiom zeego instrument and develop an accompanying program to share instrument capabilities and knowledge across projects and departments.

R21 HL098683-01 FAHRIG (PI) 12/01/2009-11/30/2011

NIH

Ultrafast Tomosynthesis for Guidance of Transbronchial Needle Biopsy

The goal of this proposal is to develop a new real-time tomosynthesis imaging system that can be used in conjunction with electromagnetic navigation in order to increase the yield of transbronchial needle biopsy.

OVERLAP: None.