

Curriculum Vitae

1. Personal Details:

Name: Univ.-Prof. Dr. techn. Dipl.-Ing. Roland B A M M E R
*Assistant Professor of Radiology (Stanford University) and
of Associate Professor of Medical Physics and
Biophysics (Medical University of Graz)*

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2. Education:

2002 - present University of Graz, Faculty of Medicine, *Venia Docendi* (Habilitation) for Medical Physics and Biophysics

2000 *Dr. techn.* (with distinction) roughly equivalent to PhD or DSc

1996 *Dipl.-Ing.* roughly equivalent to M.EE

1995-1996 Graz University of Technology, Faculty of Electrical Engineering, Electrical- and Biomedical Engineering, Graz, Austria

1991-1992 University of Graz, School of Medicine, Graz, Austria

1991-1993 Vienna University of Technology,
Faculty of Electrical Engineering, Vienna, Austria

1985-1990 Higher Federal Technical Teaching and Research Center, Braunau am Inn, Austria

3. Employment:

2007-present Associate Professor of Radiology, promotion pending.

2004-2007 Assistant Professor of Radiology, Department of Radiology, Stanford University

2002-present Associate Professor of Medical Physics and Biophysics, Department of Medical Physics, Medical University of Graz, Austria

2000-2004 Research Associate, Lucas MRS/I Center, Department of Radiology, Stanford University

1997-2000 Research Associate, Department of Neurology and Magnetic Resonance Institute, University of Graz, Austria

1990-1990 Software Engineer, Wacker Chemitronic, Hoechst Ges. m. b. H., Burghausen, Germany

4. Professional Society Membership and Functions:

- (1) International Society for Magnetic Resonance in Medicine (ISMRM):
 - Member of the ISMRM Electronic Media Committee
 - Member of the ISMRM Diffusion and Perfusion study group
 - Member of the ISMRM High Field study group
- (2) European Society for Magnetic Resonance in Medicine and Biology (ESMRMB)
- (3) European Radiology Society (ECR)

- (4) Society for Optical Engineering (SPIE)
- (5) Austrian Society for Biomedical Engineering

5. Manuscript and Grant Review Activity:

Manuscripts (~30-35 per year):

- (1) Magnetic Resonance in Medicine, Editorial Board Member
- (2) Journal of Magnetic Resonance Imaging
- (3) NMR in Biomedicine
- (4) Stroke
- (5) American Journal of Neuroradiology (AJNR)
- (6) American Journal of Radiology (AJR)
- (7) European Journal of Radiology
- (8) European Radiology
- (9) Neuroimage
- (10) Human Brain Mapping
- (11) IEEE Trans Medical Imaging
- (12) Neurobiology of Disease
- (13) Optical Engineering
- (14) ISMRM and ESMRMB Abstract Reviewer

Grants:

- (1) NIH Study Section ad hoc member BMIT and numerous special emphasis sections
- (2) EURYI grant reviewer (European pendant to NIH study section)
- (3) Anniversary Fund of the Austrian National Bank

6. Honors and Awards:

- (1) Gifted Student Award 1996 & 1997, Austrian Federal Ministry for Research and Education
- (2) ECR'97 scientific award (R. Bammer, S. Ropele, M. Pedevilla, *et al*, "Determination, Visualization and Quantitative Analysis of Pharmacokinetic and Physiological Parameters Using MR Data Sets");
- (3) RSNA student award 2006 (T. Hope, M.T. Alley, R. Bammer, "*Time-Resolved 3D Quantitative Flow MRI of the Major Intracranial Vessels: Initial Experience and Comparative Evaluation at 1.5T and 3.0T in Combination with Parallel Imaging*")
- (4) ISMRM young investigator award finalist 2007 (C. Liu, R. Bammer, M. Moseley, "*Parallel Imaging Reconstruction for Arbitrary Trajectories Using K-Space Sparse Matrices (kSPA)*.")
- (5) ISMRM outstanding poster award 2007 (M. Aksoy, C. Liu, M. Moseley, R. Bammer, "*The Effect of Navigator Resolution on Registration Accuracy in Rigid Head Motion Correction*.")

7. Teaching Activities and Mentoring:

Visiting/Guest Professorships:

2007 (2 weeks)	University of Vienna (Austria), Guest Professor for Advanced Neuroimaging Methods, Department of Radiology (Prof. Herold/Prof. Imhof/Prof. Prayer)
2007 (1 week)	Bosporus University, Istanbul (Turkey), Guest Professor for Clinical Applications and User Interfaces for DT-MRI Data: Tensor Field Visualization and Interaction. Department of Electrical Engineering (Prof. Acar).
2006 (1 week)	Bosporus University, Istanbul (Turkey), Guest Professor for Parallel Imaging Reconstruction and Diffusion Tensor MRI. Departments of Electrical Engineering (Prof. Acar) and Biomedical Engineering (Prof. Ozturk)
2005 (1 week)	Medical University of Graz (Austria), Visiting Professor for Cutting Edge MRI methods in High Field MRI, Departments of Radiology (Prof. Stollberger) and Neurology (Prof. Fazekas)
2003 (2 weeks)	University of Vienna (Austria), Guest Professor for Advanced Concepts in MRI, Department of Radiology (Prof. Lechner/Prof. Herold)

Classes:

- since 2005 course director of *"Physics for Radiology Residents"* – yearlong course for Radiology Residents in preparation for their Board exams.
- since 2003 MRI-segment of *"Physics for Radiology Residents"* – yearlong course for Radiology Residents in preparation for their Board exams..
- since 2003 MRI -segment of *"Physics for Radiology Residents - Review"* – a review course for radiology residents prior to their board exams.
- since 2003 *"Current concepts of MR physics"* – annual class offered at the Medical University of Graz, Austria
- since 2003 *"Foundations of Molecular Imaging"* – annual class offered at the Medical University of Graz, Austria

CME courses:

- since 2007 course director, *"Whole Body MRI for Clinicians"* ISMRM Morning Categorical Course
- since 2006 course director and speaker, *"Advances in Pediatric MRI and MDCT"* annual CME course in Las Vegas
- since 2005 speaker, *"High Field Imaging"* workshop at *"Current Concepts of MR Physics"* annual CME course in Monterey
- since 2003 speaker, *"Parallel Imaging"* talk at *"Current Concepts of MR Physics"* annual CME course in Monterey

Invited talks (abbreviated list 2004-2007):

- 2007 *"Clinical Applications and User Interfaces for DT-MRI Data: Tensor Field Visualization and Interaction."* Bosphorus University. Istanbul, Turkey.
- 2007 *"Advanced Neuroimaging Methods."* University of Vienna, Austria.
- 2006 *"Alternatives to single-shot EPI DWI methods."* Diffusion Workshop. European Society for Magnetic Resonance in Medicine and Biology (ESMRMB) –, Warsaw, Poland.
- 2006 *"Sequence Design for DWI and DTI"*. Mini Categorical Course: Problems and solutions in fMRI, DTI methodology. European Society for Magnetic Resonance in Medicine and Biology (ESMRMB) – Annual Meeting, Warsaw, Poland.
- 2006 *"Parallel Imaging"*. MR imaging workshop. University of Arizona/Barrows Neurological Institute, Phoenix, AZ.
- 2006 *"Cutting-Edge Imaging of the Spine"*. Clinical categorical course. International Society of Magnetic Resonance in Medicine (ISMRM) – Annual Meeting, Seattle, WA.
- 2006 *"Clinical Application of DTI"*. Acebadem Hospital Clinical MRI symposium. Istanbul, Turkey.
- 2005 *"Parallel Imaging"*. Society of MR Technologists (SMRT), Regional Meeting, Stanford, CA.
- 2005 *"Parallel Imaging in Diffusion MR"*. International Society of Magnetic Resonance in Medicine (ISMRM) – 2nd Diffusion Workshop, Lake Louise, CAN.
- 2005 *"Neuroimaging in the next 15 Years"*. MRI Workshop, Goethe University, Frankfurt, Germany – MRI Workshop.
- 2005 *"High Field MRI: Transitioning from Research to Clinical Routine"*. Medical University of Graz, Austria.
- 2005 *"Diffusion Imaging of the Spine and Spinal Cord"*. American Society of Neuroradiology (ASNR) – Annual Meeting, Toronto, CAN.
- 2005 *"Basic Principles of MRI"*. American Academy of Pediatrics (AAP) – Annual Meeting, Washington, D.C.

- 2004 "Diffusion Tensor Imaging". Society of MR Technologists (SMRT), Annual Meeting, Kyoto, JAPAN.
- 2004 "Self-calibrated and -navigated Parallel Imaging for Diffusion and Perfusion MRI". International Society of Magnetic Resonance in Medicine (ISMRM) – 2nd Parallel Imaging Workshop, Zurich, CH.

Mentoring:

Clinical Fellows: Maarten Lansberg (Neurology), Talia Vertinsky (Neuroradiology, 2007), Michael Krasnokutsky (Neuroradiology, 2007), Anne Chin (CV 2007), Elsie Ngyuen (CV 2007), Byard Edwards (NCI, 2006), Lewis Chin (NCI 2006), Ruby Chang (Body, 2004), Daniel Margolis (Body & NCI, 2004-2005), Lawrence Chow (Body & NCI, 2002-2003)

Supervisor/Thesis Advisor (current):

Research Associates: Stefan Skare, Rexford Newbould, Matus Straka, David Clayton, Sabine Bammer

Postdoctoral Fellows: Samantha Holdsworth, Laura Pisani, Chunlei Liu

Graduate Students: Murat Aksoy, Didem Bilensoy, Heiko Schmiedeskamp, Anders Nordell, Daniel Koppeinigg, Maximilian Haeberlin

8. U.S. Patents (awarded and pending):

8.1. Awarded

1. R. Bammer, M. Markl, B. Acar, N. Pelc, M. Moseley. *Method of use for characterization and correction of spatial gradient nonuniformities in diffusion imaging*. US. Pat. 6,969,991.
2. M. Markl, N. Pelc, R. Bammer. *Method for the generalized reconstruction of magnetic resonance velocity measurements (phase contrast MRI): correction for the effect of gradient field non-linearities*. U.S. Pat. 7,202,662.

8.2. Pending

3. C. Liu, R. Bammer, B. Acar, M. Moseley. *Generalized diffusion tensor imaging (GDTI) using higher order tensor (HOT) statistics*.
4. R. Bammer, C. Liu, *An Apparatus To Perform Generalized Image Reconstruction from Arbitrary k-space Sampling in Combination with Parallel Imaging , Phase Correction, Off Resonance Correction, and Consideration of Gradient Non-linearities*.
5. S. Skare, R. Bammer. *An Apparatus to Perform Parallel Magnetic Resonance Imaging in Hybrid Space Using Weight Functions For The Multiple Detectors Involved*.
6. R. Bammer, M.E. Moseley. *An Apparatus To Perform Dynamic Susceptibility Contrast Weighted Magnetic Resonance Perfusion Imaging With Improved Image Quality And Better Quantification Capabilities*.
7. A.C.S. Brau, P. Beatty, S.T. Skare, R. Bammer. *Magnetic Resonance Imaging Method and Apparatus for Autocalibrated Partially Parallel Imaging with Flexible Reconstruction Pathways*.
8. R. Bammer, C.Liu. *Generalized MRI Reconstruction with Correction for Multiple Image Distortion*.
9. S.T. Skare, R. Bammer. *An Apparatus to acquire and process Magnetic resonance imaging data using a Propeller k-space sampling scheme with echo planar readouts*.
10. R. Bammer, M. Aksoy, C. Liu, R.D. Newbould. *An Apparatus To Perform Motion Corrected Magnetic Resonance Imaging*.
11. R. Bammer, R. Newbould. *An Apparatus for Real-Time Motion Compensated Magnetic Resonance Imaging, Scan Geometry Re-Alignment, and Patient Monitoring*.
12. R. Bammer, R. Newbould, S.T. Skare. *A Method for Self-Calibrating Parallel Imaging Using Interleaved Echo-Planar Imaging*.
13. C. Lew, A. Pineda, R. Bammer. *Phase-constrained Magnitude Reconstruction with Iterative Phase Refinement*.
14. C. Liu, R. Bammer, M. Moseley *Parallel Imaging Reconstruction for Arbitrary Trajectories using k-space Sparse Matrices (kSPA)*.
15. S.T. Skare, R. Newbould, R. Bammer,. *A Method for Self-Calibrating Parallel Imaging Using Interleaved Echo-Planar Imaging in Magnetic Resonance Imaging*.

16. A. Nordell, S.T. Skare, R. Bammer. *Method for Simultaneous Correction of Non-equidistant k-space Sampling and Nyquist Ghosts in Echo-Planar Magnetic Resonance Imaging*.
17. M. Aksoy, R. Bammer. *An Apparatus to Perform Motion Corrected Diffusion Tensor Magnetic Resonance Imaging*.
18. R. D. Newbould, R. Bammer. *A Method to Perform Dynamic Combined Gradient Echo and Spin Echo Imaging for functional Magnetic Resonance Imaging and Perfusion-Weighted Magnetic Resonance Imaging*.

9. Bibliography:

A. Peer-reviewed papers:

1. R. Bammer, R. Stollberger, M. Augustin, J. Simbrunner, H. Offenbacher, H. Kooijman, S. Ropele, P. Kapeller, P. Wach, F. Ebner, F. Fazekas. *Diffusion Imaging Using Navigated Interleaved Echo Planar Imaging and a Conventional Gradient System*. **Radiology** **211**, 799-806. 1999.
2. R. Bammer, M. Augustin, S. Strasser-Fuchs, T. Seifert, P. Kapeller, R. Stollberger, F. Ebner, K.V. Toyka, H.-P. Hartung, F. Fazekas. *Magnetic resonance diffusion tensor imaging for characterizing diffuse and focal white matter abnormalities in multiple sclerosis*. **Magn Reson Med**, 44: 583-591. 2000.
3. R. Bammer, S.L. Keeling, M. Augustin, K.P. Pruessmann, R. Wolf, F. Fazekas. *Improved diffusion-weighted single-shot Echo-Planar imaging (EPI) in stroke using sensitivity encoding (SENSE)*. **Magn Reson Med**, 46: 548-554, 2001.
4. R. Bammer, M. Auer, S.L. Keeling, M. Augustin, R.W. Prokesch, R. Stollberger, M.E. Moseley, F. Fazekas. *Diffusion tensor imaging using single-shot SENSE-EPI*. **Magn Reson Med**, 48: 128-136, 2002.
5. R. Bammer, F. Fazekas, M. Augustin, J. Simbrunner, S. Strasser-Fuchs, T. Seifert, R. Stollberger, H.-P. Hartung. *Diffusion-weighted imaging of the spinal cord*. **Am J Neuroradiol**, 21: 587-591. 2000.
6. R. Bammer, M. Augustin, J. Simbrunner, R. Stollberger, F. Fazekas. *Diffusion-weighted imaging of the spinal cord: interleaved EPI is superior to FSE*. **J Magnetic Reson Imag**, 15: 364-373, 2002.
7. R. Bammer, A.M. Herneth, S.E. Maier, K. Butts, R.W. Prokesch, H.M. Do, S.W. Atlas, M.E. Moseley. *Line scan diffusion imaging of the spine*. **Am J Neuroradiol**, 24: 5-12, 2003.
8. R. Bammer, F. Fazekas. *Diffusion imaging in multiple sclerosis*. **Neuroimaging Clinics of North America**, 12: 71-106, 2002.
9. R. Bammer. *Basic principles of diffusion-weighted imaging*. **Europ Radiology**, 45: 169-84, 2003.
10. R. Bammer, B. Acar, M.E. Moseley. *In-vivo MR tractography using diffusion imaging*. **Europ Radiology**, 45: 223-34, 2003.
11. R. Bammer, M. Markl, B. Acar, A.S. Barnett, M.T. Alley, N.J. Pelc, M.E. Moseley, G.H. Glover. *Analysis and generalized correction of the effect of spatial gradient field distortions in diffusion-weighted imaging*. **Magn Reson Med**, 50: 560-569.
12. R. Bammer, F. Fazekas. *Diffusion imaging of the human spinal cord and the vertebral column*. **Top Magn Reson Imaging**, 14: 461-76, 2003.
13. R. Bammer, A.J. de Crespigny, D. Howard, S. Seri, Y. Hashiguchi, A. Nakatani, M.E. Moseley. *A comparative evaluation of CH3-DTPA-Gd (NMS60) for contrast enhanced magnetic resonance angiography*. **Magnetic Resonance Imaging**, 22: 619-624, 2004.
14. R. Bammer. *Parallel Imaging: (part I)*. **Top Magn Reson Imaging**, 15:127-128, 2004.
15. R. Bammer, S.O. Schoenberg. *Current concepts and advances in clinical parallel magnetic resonance imaging*. **Top Magn Reson Imaging**, 15:129-158, 2004.
16. R. Bammer. *Parallel Imaging: (part II)*. **Top Magn Reson Imaging**, 15:221, 2004.
17. R. Bammer, S. Skare, R. Newbould, C. Liu, V. Thijs, S. Ropele, D.B. Clayton, G. Krueger, M.E. Moseley, G.H. Glover. *Foundations of Advanced Magnetic Resonance Imaging*. **NeuroRx**, 2: 167-196, 2005.
18. R. Bammer, T. Hope, M. Aksoy, M.T. Alley. *Time-Resolved 3D Quantitative Flow MRI of the Major Intracranial Vessels: Initial Experience and Comparative Evaluation at 1.5T and 3.0T in Combination with Parallel Imaging*. **Magn Reson Med**, 57: 127-140, 2007.
19. R. Bammer, M. Aksoy, C. Liu. *Augmented Generalized SENSE Reconstruction to Correct for Rigid Body Motion*. **Magn Reson Med**, 57: 90-102, 2007.
20. T. C. Wascher, R. Bammer, R. Stollberger, B. Bahadori, S. Wallner, H. Toplak. *Forearm composition contributes to differences in reactive hyperaemia between healthy men and women*. **Eur J Clin Invest**, 28: 243-248. 1998.

21. F. Fazekas, S. Ropele, R. Bammer, P. Kapeller, R. Stollberger, R. Schmidt. *Novel imaging technologies in the assessment of cerebral ageing and vascular dementia. J Neural Transm Suppl*, 59: 45-52, 2000.
22. M. Augustin, J. Simbrunner, R. Bammer, P. Kapeller, H. P. Hartung, F. Fazekas. *Diffusion-Weighted Imaging of Patients with Recent Ischemic Stroke: A Comparison with Conventional and Contrast-Enhanced MRI. Am J Neuroradiol*, 21: 1596-1602, 2000.
23. S. Ropele, R. Bammer, R. Stollberger, F. Fazekas. *T1 maps from shifted spin echoes and stimulated echoes. Magn Reson Med*, 46: 1242-1245, 2001.
24. G. Schweitzer, G. Edlinger, G. Krausz, C. Neuper, R. Bammer, R. Stollberger, G. Pfurtscheller. *Source localization of induced cortical oscillations during tactile finger stimulation. Biomed Tech*, 46: 24-28, 2001.
25. R.W. Prokesch, L.C. Chow, C.F. Beaulieu, R. Bammer, R.B. Jeffrey. *Isoattenuating pancreatic adenocarcinoma at multi-detector row CT: secondary signs. Radiology*, 224: 764-768, 2002.
26. R.W. Prokesch, L.C. Chow, C.F. Beaulieu, M. Nino-Murcia, R.E. Mindelzun, R. Bammer, J. Huang, R.B. Jeffrey. *Local staging of pancreatic carcinoma with multi-detector row CT: use of curved planar reformation – initial experience. Radiology*, 225: 759-765, 2002.
27. A. M. Herneth, M.O. Philipp, J. Naude, M. Funovics, R. Beichel, R. Bammer, H. Imhof. *Vertebral metastases: assessment with apparent diffusion coefficient. Radiology*, 225: 889-894, 2002.
28. M. Cercignani, R. Bammer, M.P. Sormani, F. Fazekas, M. Filippi. *Inter-sequence and inter-scanner variability of diffusion tensor MRI histogram-derived metrics of the brain in healthy volunteers. Am J Neuroradiol*, 24: 638-643.
29. R. W. Prokesch, C.H. Coulam, L.C. Chow, R. Bammer, G.D. Rubin. *CT angiography of the subclavian artery: utility of curved planar reformations. JCAT*, 26: 199-201, 2002.
30. M.E. Moseley, R. Bammer, J. Illes. *Diffusion-tensor imaging of cognitive performance. Brain and Cognition*, 2002, 50: 396-413.
31. U. Müller, R. Bammer, E. Halmschlager, R. Stollberger, R. Wimmer. *Detection of fungal wood decay using magnetic resonance imaging. Holz als Roh- und Werkstoff*, 59: 190-194, 2001.
32. U. Müller, R. Bammer, A. Teischinger. *Detection of incipient fungal attack in wood using magnetic resonance parameter mapping. Holzforschung*, 56: 529-534, 2002.
33. S.L. Keeling and R. Bammer. *A variational approach to magnetic resonance coil sensitivity estimation, Optimization and Control*, 207, 2002.
34. M. Markl, R. Bammer, M.T. Alley, C.J. Elkins, M.T. Draney, M.E. Moseley, G.H. Glover, N.J. Pelc. *Generalized reconstruction of phase contrast MRI: analysis and correction of the effect of gradient field non-linearities. Magn Reson Med*, 50: 791-801, 2003.
35. L.C. Chow, R. Bammer, M.E. Moseley, F.G. Sommer. *Single breath-hold diffusion weighted imaging of the abdomen. J Magn Reson Imag*, 18: 377-382, 2003.
36. V.N. Thijs, D.M. Somford, R. Bammer, W. Robberecht, M.E. Moseley, G.W. Albers. *Influence of Arterial Input Function on Hypoperfusion Volumes Measured With Perfusion-Weighted Imaging. Stroke*, 35: 94-98, 2004.
37. C. Liu, R. Bammer, B. Acar, M.E. Moseley. *Generalized diffusion tensor imaging (GDTI): A method for characterizing and imaging diffusion anisotropy caused by non-gaussian diffusion. Israel Journal of Chemistry*, 43: 145-154, 2003.
38. C. Liu, R. Bammer, B. Acar, M.E. Moseley. *Generalized diffusion tensor imaging (GDTI) using higher order tensor (HOT) statistics. Magn Reson Med*, 51: 924-937, 2004.
39. M. Mlynash, I. Eyngorn, R. Bammer, M. Moseley, D. Tong. *An automated method for generating the arterial input function in perfusion weighted Magnetic Resonance Imaging: Validation in stroke patients. Am J Neuroradiol*, 26:1479-86, 2005.
40. G.K. Deutsch, R.F. Dougherty, R. Bammer, W.T. Siok, J. D.E. Gabrieli, B. Wandell, *Correlations between white matter structure and reading performance in children measured by diffusion tensor imaging. Cortex*, 41:354-63, 2005.
41. M. Augustin, F. Fazekas, R. Bammer. *Fast patient workup in acute stroke using parallel imaging. Top Magn Reson Imaging*, 15: 207-219, 2004.
42. D.J.A. Margolis, L. Chow, R. Bammer. *Parallel imaging of the abdomen. Top Magn Reson Imaging*, 15: 197-206, 2004.
43. S.L. Keeling, R. Bammer, T. Kogler, R. Stollberger. *On the convolution model of dynamic contrast enhanced magnetic resonance imaging and nonparametric deconvolution approaches. Optimization and Control*, 298, 2004.

44. M. Thurnher, R. Bammer. *Diffusion-weighted MRI of the Spinal Cord. Rivista di Neuroradiologica*, 17: 314-321, 2004.
45. C. Liu, R. Bammer, D.-H. Kim, M.E. Moseley. *Self-navigated interleaved spiral (SNAILS): application to high-resolution diffusion tensor imaging. Magn Reson Med*, 52:1388-1396, 2005.
46. N. Barnea-Goraly, V. Menon, M. Eckert, L. Tamm, R. Bammer, A. Karmeskiy, C.C. Dant, A.L. Reiss. *White matter development during childhood and adolescence : a cross-sectional diffusion tensor imaging study. Cerebral Cortex*, 15 : 1848-1854, 2005.
47. R. Dougherty, M. Ben-Shachar, R. Bammer, B. Wandell. *Functional Organization of Human Occipital-callosal Fiber Tracts. Proceedings of the National Academy of Sciences*, 26:1479-86, 2005.
48. C. Liu, R. Bammer, M.E. Moseley. *Limitations of apparent diffusion coefficient-based models in characterizing non-gaussian diffusion. Magn Reson Med*, 54:419-428, 2005.
49. N. Barnea-Goraly, S. Eliez, V. Menon, R. Bammer, A.L. Reiss. *Arithmetic ability and parietal alterations: a DTI study in velocardiofacial syndrome. Brain Res Cogn Brain Res*, 25: 735-740, 2005.
50. C. Liu, M.E. Moseley, R. Bammer. *Simultaneous phase correction and SENSE reconstruction for navigated multi-shot DWI with non-cartesian k-space sampling. Magn Reson Med*, 54: 1412-1422, 2005.
51. M. Rovaris, A. Gass, R. Bammer, S.J. Hickman, O. Ciccarelli, D.H. Miller, M. Filippi. *Diffusion MRI in Multiple Sclerosis. Neurology*, 65: 1526-1532, 2005.
52. W. Kakuda, V.N. Thijs, M.G. Lansberg, R. Bammer, L. Wechsler, S. Kemp, M.E. Moseley, M.P. Marks, G.W. Albers. *Clinical importance of microbleeds in patients receiving IV thrombolysis. Neurology*, 65 : 1175-1178, 2005.
53. S. Skare, R.D. Newbould, D.B. Clayton, R. Bammer. *Propeller EPI in the other direction. Magn Reson Med*, 55: 1298-307, 2006.
54. T. Jochimsen, A. Schafer, R. Bammer, M. Moseley. *Efficient simulation of magnetic resonance imaging with Bloch-Torrey equations using intra-voxel magnetization gradients. J Magn Reson*, 180: 29-38, 2006.
55. E. Yoruk, B. Acar, R. Bammer. *A physical model for DT-MRI based connectivity map computation. Med Image Comput Comput Assist Interv Int Conf Med Image Comput Comput Assist Interv*, 8: 213-220, 2006.
56. K.J. Stevens, D.B. Spenciner, K.L. Griffiths, K.D. Kim, M. Zwienerberg-Lee, T. Alamin, R. Bammer, Moseley. *Comparison of minimally invasive and conventional open posterolateral lumbar fusion using magnetic resonance imaging and retraction pressure studies. J Spinal Disorder Techn*, 19: 77-86, 2006.
57. M.M. Thurnherr, R. Bammer. *Diffusion-weighted Magnetic Resonance Imaging in the spine and spinal cord. Semin Roentgenol*, 41:294-311, 2006.
58. C. Cascio, M. Styner, R.G. Smith, M. Poe, G. Gerig, H.C. Hazlett, M. Jomier, R. Bammer, J. Piven. *Tractography-based segmentation of the corpus callosum reveals a reduced relationship to cortical white matter volume in young children with developmental delay. Am J Psychiatry*, 163: 2157-63, 2006.
59. T. Jochimsen, R.D. Newbould, S.T. Skare, D.B. Clayton, G.W. Albers, M.E. Moseley, R. Bammer. *Identifying Systematic Errors in Quantitative Dynamic-Susceptibility Contrast Perfusion Imaging by High Resolution Multi-Echo Parallel EPI. NMR Biomed*, 2006.
60. M.M. Thurnherr, R. Bammer. *Diffusion-weighted MR imaging (DWI) in spinal cord ischemia. Neuroradiology*, 48:795-801, 2006.
61. E. Pagani, R. Bammer, M.A. Horsfield, M. Rovaris, A. Gass, O. Ciccarelli, A. Thompson, T. Yousry, D.H. Miller, F. Fazekas, C.H. Polman, F. Barkhof, X. Montalban, A. Rovira, L. Kappos, M. Filippi. *Diffusion MRI in multiple sclerosis: Technical aspects and challenges. Am J Neuroradiol*, 28:411-420, 2007.
62. L.J. Pisani, R. Bammer, G.H. Glover. *Restricted Field of View Magnetic Resonance Imaging of a Dynamic Time Series. Magn Reson Med*, 57:297-307, 2007.
63. G.W. Albers, V.N. Thijs, L. Wechsler, S. Kemp, G. Schlaug, E. Skalabrin, R. Bammer, W. Kakuda, M. Lansberg, A. Shuaib, W. Coplin, S. Hamilton, M. Moseley, M.P. Marks. *Magnetic Resonance Imaging Profiles Predict Clinical Response to Early Reperfusion: The Diffusion and Perfusion Imaging Evaluation for Understanding Stroke Evolution (DEFUSE) Study, Ann Neurol*, 60: 508-517, 2006.
64. G.E. Gold, B.A. Hargreaves, S.B. Reeder, W.F. Block, S.S. Vasanawala, P.R. Kornaat, R. Bammer, R.D. Newbould, C.F. Beaulieu. *Balanced SSFP Imaging of the Musculoskeletal System. J Magn Reson Imag*, 25:270-278, 2007.
65. C.D. Lew, M.T. Alley, R. Bammer, D.M. Spielman, F. Chan. *Peak Velocity and Flow Quantification Validation for Sensitivity-Encoded Phase-Contrast MR Imaging. Acad Radiol*, 14:258-269, 2007.

66. S.L. Keeling, R. Bammer, R. Stollberger. Revision of the theory of tracer transport and the convolution model of dynamic contrast enhanced magnetic resonance imaging. *J Math Biol*, 2007.
67. S.T. Skare, R.D. Newbould, D.B. Clayton, G.W. Albers, S. Nagle, R. Bammer. *Clinical Multi-Shot DW EPI through Parallel Imaging with Considerations of Susceptibility, Motion and Noise. Magn Reson Med*, 57: 881-900, 2007.
68. T.A. Vertinsky, M. Krasnokutsky, M. Augustin, R. Bammer. Cutting edge imaging of the spine. *Neuroimaging Clinics of North America*, 17: 117-136, 2007.
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Manuscripts in press:

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10. Current Other Support:

ACTIVE:

5R01 EB2711 Bammer (PI)+R01EB2711S3 (PI)

National Institutes of Health (NIBIB)

“Improving SENSE for Spiral and Echo-planar Imaging”

The aim of this project is to improve and evaluate parallel imaging for diffusion- and perfusion-weighted EPI and spiral imaging in aiding the clinical diagnosis of human stroke.

Role: PI

Endius, Inc. Bammer (PI)

“A Multi-Center Study to Evaluate the Effect of Minimally Invasive Versus Open Posterolateral Lumbar fusion on the Paraspinal Musculature Using High Resolution Structural and Quantitative MR Imaging”

Role: PI

1R01 NS047607-01 Moseley (PI)

National Institute of Health (NINDS)

“Improved PWI Methodology in Acute Clinical Stroke”

The overall goal of this new submission is to temporally differentiate subclinical oligemia above the threshold for clinical impairment (reduced CBF yet above a critical diffusion ADC threshold) from brain below thresholds of viability and at risk for hemorrhage.

Role: Co-Investigator

2R01 NS34866 Wijman (PI)

National Institutes of Health (NINDS)

“DWI Assessment of Clinical Acute Stroke”

Diagnostic Utility of MRI in Intracerebral Hemorrhage The overall aim of this project is to measure the impact of new, state-of-the-art brain imaging technology on the diagnosis and treatment of patients with a spontaneous ICH with the hope to improve patient outcome.

Role: Co-Investigator

P41 RR09784 Glover (PI)

National Institutes of Health (NIH/NCRR)

“Center for Advanced Magnetic Resonance Technology at Stanford”

The major goals of this project are to develop innovative MR techniques for fundamental anatomic, physiologic and pathophysiologic studies involving animals and humans and to serve the academic and scientific community through collaborations, education, and access to Center facilities and resources.

Role: Co-PI (Core 3: Diffusion and Perfusion MRI)

1R01 EB002524 Gold (PI)

National Institutes of Health

“Rapid MRI for Evaluation of Osteoarthritis”

The aim of this project is for improving MRI imaging of morphology and physiology of osteoarthritis.

Role: Co-Investigator

1R01 EY015228 Good (PI)

National Eye Institute (NEI)

“The Effects of Prematurity on Visual Development”

The goal of this study is to measure visual development in healthy, premature infants less than 32 weeks gestational age, and compare this to full-term infants.

Role: Co-Investigator

COMPLETED:

1R01 NS39325 Albers (PI)

NINDS

“New MRI Techniques Prior to tPA Therapy 3-6 Hours After Stroke (DEFUSE)”.

This study will apply new MRI techniques to investigate whether specific MRI profiled will predict a favorable clinical response to IV tPA therapy administered between 3 and 6 hours after stroke onset.

Role: PI

5R01 NS34866 Moseley (PI)

NINDS

“DWI Assessment of Clinical Acute Stroke”

The goal of this project is to assess the utility of T2- and diffusion-weighted MR in aiding the clinical diagnosis of human stroke. NS34866 differs from the current proposal in that it does not utilize perfusion techniques or critical evaluations of stroke severity.

Role: Sub-Investigator

MH-58262 R01 Ford (PI)

National Institutes of Mental Health (NIMH)

“Auditory hallucinations in schizophrenia: ERPS & fMRI”

This projects aim is to Use ERPs and fMRI to study the neurobiology of auditory hallucinations in schizophrenic patients.

1R01 EY015000-01 Wandell (PI)

National Institute of Health (NEI)

“Human Visual Pathways Development and Skilled Reading”

Brain circuitry expands and matures at an extraordinary rate during the ages just prior to puberty, from 7-12 years. This is also the age range over which children develop many important cognitive skills, such as reading. With the advent of several new brain imaging technologies, it is now possible to make noninvasive measurements of brain development in regions that, in adult, are essential for skilled reading. Following individual children as they mature over the ages of 7 to 11 years, we propose to study the development of the functional responses in two specific reading-related brain regions (ventral and lateral occipital temporal cortex). We also propose to track the anatomical development of these areas in individual children.

11. Collaborators:

Stanford University Faculty:

Gary Glover, PhD (Mentor)

Michael Moseley, PhD

Greg Albers, MD

Christine Wijman, MD

Garry Gold, MD

Allan Reis, MD

Nancy Fischbein, MD

Spiral Imaging, fetal fMRI, High Field MRI

Diffusion and Perfusion MRI Acquisition Methods

Diffusion and Perfusion MRI in Stroke

MRI in Hemorrhage and Coma

MR relaxometry of cartilage, DTI of leg muscles

Imaging of White Matter in pediatric psychiatric disorders

Angiographic Methods in Stroke, DWI of cholesteatoma

<i>Brooke Jeffrey, MD</i>	DWI of the Abdomen, Whole body DWI
<i>Graham Sommer, MD</i>	Imaging of Renal function, Renal DWI
<i>Richard Barth, MD</i>	Parallel imaging for fetal MRI
<i>Frandics Chan, MD</i>	MR flow measurements in pediatric cardiac patients
<i>Scott Atlas, MD</i>	Clinical Neuroimaging, High resolution MRI in MS, streamline visualization of blood flow in intracranial vessels
<i>Ronald Ariagno, MD</i>	Imaging of White Matter in premature children
<i>Patrick Barnes, MD</i>	Clinical Pediatric Neuroimaging, Clinical DTI and fMRI, Arterial Spin Labeling
<i>Chandra Ramamoorthy, MD</i>	Diffusion changes in children after heart surgery using hypothermia (a piglet model), Real-time motion correction to reduce anesthesia
<i>Erika Rubesova, MD</i>	Propeller T2w and DWI in children
<i>Brian Wandell, PhD</i>	White Matter imaging in children with reading disabilities
<i>David Lyons, PhD</i>	DTI in monkeys
<i>Judy Illes, PhD</i>	Ethical aspects of neuroimaging
<i><u>Extramural Faculty:</u></i>	
<i>Judy Ford, MD (Yale)</i>	<i>DTI in schizophrenia</i>
<i>Glenn Stebbins, PhD (Chicago)</i>	<i>DTI in cognitive neuroscience</i>
<i>Gaby Pell, PhD (Melbourne)</i>	<i>DTI in children</i>
<i>Rudolf Stollberger, PhD (Graz)</i>	<i>Inverse source reconstruction, Time-resolved MRA</i>
<i>Majda Thurnherr, MD (Vienna)</i>	<i>MRI of the spine and spinal cord</i>
<i>Daniela Prayer, MD (Vienna)</i>	<i>fetal MRI</i>
<i>Ted Trouard, PhD (Tucson)</i>	<i>PERMEATE fMRI</i>
<i>William Good, MD (UCSF)</i>	<i>MRI of the pediatric visual system</i>
<i>Jeffrey Alger, PhD (UCLA)</i>	<i>DSC Perfusion MRI</i>
<i>Chelsea Kidwell, MD (NIH)</i>	<i>DSC Perfusion MRI</i>

12. Department and School of Medicine Activities

- Member of “Foreign Faculty Task Force” (head: G. Rubin).
- SOM Faculty Senate: Department of Radiology stand in.