

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel in the order listed for Form Page 2.
Follow the sample format on next page for each person. **DO NOT EXCEED FOUR PAGES.**

NAME		POSITION TITLE		
Dietmar Cordes, Ph.D.		Assistant Professor		
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	
Technical University of Clausthal, Germany	B.S.	1981	Physics	
Technical University of Clausthal, Germany	M.S.	1985	Physics & Electronics	
University of Reno, NV	Ph.D.	1989	Theoretical Physics	
Georgia State University, Atlanta	Post-doctoral	1990-1991	Theoretical Physics	
German Patent Office, Munich	Post-doctoral	1991-1992	Patent Law	
University of Wisconsin, Madison	Post-doctoral	1996-2000	Functional MRI	

A. Positions and Honors

Professional Experience:

- 1991-1992: Patent Examiner for scientific inventions at the German Patent Office in Munich, Germany.
- 1993: Research Associate in Computational Physics, Dept. of Physics, University of Nevada-Reno.
- 1994-1995: Lecturer, Department of Physics, University of Nevada-Reno.
- 1995-1996: Adjunct Professor, Dept. of Physics, Univ. of Nevada-Reno, Computational modeling in Atomic Physics.
- 1996: Research Associate, Digital image processing lab, Dept. of Electrical Engineering, Univ. of Nevada-Reno.
- 1996-2000: Assistant Scientist, Depts. of Medical Physics and Radiology, University of Wisconsin-Madison, specializing in fMRI data analysis and MR pulse sequence development.
- 2000-2006: Research Assistant Professor, Dept. of Radiology, Univ. of Washington-Seattle, fMRI data analysis.
- 2006-now: Assistant Professor, Dept. of Radiology, University of Colorado Health Sciences, Denver, fMRI data analysis.

Honors:

- Awarded Sigma Pi Sigma membership in physics honor society, 1988.
- NIH reviewer for study section CND (01) Clinical Neurological Disease, 2004.
- Associate Editor of the journal *Computerized Medical Imaging And Graphics*, 2004-now.
- Member of the Scientific Advisory Board for Human Brain Mapping (HBM), 2004-now.
- Member of the Scientific Advisory Board for International Society of Magn. Res. in Med. (ISMRM), 2004-now.

Professional Organizations:

International Society of Magnetic Resonance in Medicine, The American Physical Society, Sigma Pi Sigma Physics Honor Society, Organization of HBM, International Society for Neural Networks.

Patents:

D. Cordes, P98110US. Functional Magnetic Resonance Imaging using Optimized Z-Gradients, 2000.

B. Selected peer-reviewed publications (in chronological order).

- D. Cordes and P.L. Altick. Non-Adiabatic Hyperspherical Approach to Two Electron Systems. *Phys. Rev. A* **38**, 5479 (1988).
- D. Cordes and P.L. Altick. Scattering Variational Calculation of Characteristics of Doubly Excited States in Helium. *Phys. Rev. A* **40**, 20 (1989).
- D. Cordes and P.L. Altick. Application of the Multichannel Configuration-Interaction Theory to the Characteristics of the $(3,3b)^1S$ State of Helium. *Phys. Rev. A* **41**, 5213 (1990).
- D. Cordes, V. Haughton, K. Arfanakis, G. Wendt, P. Turski, C. Moritz, M. Quigley, M. Meyerand. Mapping Functional Related Regions of Brain with Functional Connectivity MRI. *Am J Neuroradiol* **21**:1636-1644 (2000).
- D. Cordes, P. A. Turski, J. A. Sorenson. Compensation of Susceptibility-Induced Signal Loss in Echoplanar Imaging for Functional Applications. *Magn Res Imaging* **18**:1055-1068 (2000).
- C. Moritz, M. Meyerand, D. Cordes, V. Haughton. Functional MR Imaging Activation after Finger Tapping has Shorter Duration in the Basal Ganglia than in Sensorimotor Cortex. *Am J Neuroradiol* **21**:1228-1234 (2000).

- K. Arfanakis, D. Cordes, V. Haughton, C. Moritz, M. Quigley, M. Meyerand. Combining Independent Component Analysis and Correlation Analysis to probe interregional Connectivity in fMRI Task Activation Datasets. *Magn Reson Imaging* 18:921-930 (2000).
- T. Stein, C. Moritz, M. Quigley, D. Cordes, V. Haughton, E. Meyerand. Functional Connectivity in the Thalamus and Hippocampus studied with fMRI. *Am J Neuroradiol* 21:1397-1401 (2000).
- C. Moritz, V. Haughton, D. Cordes, M. Quigley, M. Meyerand. Whole-Brain functional MR Imaging Activation from a Finger-Tapping task Examined with Independent Component Analysis. *Am J Neuroradiol* 21:1629-1635 (2000).
- D. Cordes, K. Arfanakis, J. Carew, V. Haughton. Frequencies Contributing to Functional Connectivity in the Cerebral Cortex in "Resting-State" Data. *Am J Neuroradiol. AJNR* 22:1326-1333 (2001).
- M. Quigley, D. Cordes, G. Wendt, P. Turski, C. Moritz, V. Haughton, M. Meyerand. Effect of Focal and Non-Focal Cerebral Lesions on Functional Connectivity Studied with MRI. *Am J Neuroradiol* 22:294-300 (2001)
- K. Arfanakis, D. Cordes, V. Haughton, J. Carew, M. Meyerand. Independent Component Analysis applied to Diffusion Tensor MRI. *Magn. Reson. Med.* 47:354-363 (2002).
- M. Quigley, V. Haughton, John Carew, D. Cordes, C. Moritz, M. Meyerand. A Comparison of Independent Component Analysis and Conventional Hypothesis-Driven Analysis Clinical Functional MR Image Processing. *Am J Neuroradiol. AJNR* 23:49-58 (2002).
- G. Nybakken, M. Quigley, C. Moritz, D. Cordes, V. Haughton, M. Meyerand. Test-retest precision of functional magnetic resonance imaging processed with independent component analysis. *Neuroradiology* 44(5):403-406 (2002).
- D. Cordes, V. Haughton, J. Carew, K. Arfanakis, K. Maravilla. Hierarchical Clustering to Measure Connectivity in fMRI Resting-State Data. *Magn Res Imaging* 20:305-317 (2002).
- T. J. Carroll, V.M. Haughton, H. Rowley, D. Cordes. The confounding effect of large vessels on MR perfusion images analyzed with ICA. *Am J Neuroradiol. AJNR* 23:1007-1012 (2002).
- R. Nandy and D. Cordes. Novel ROC-type Method for Testing the Efficiency of Multivariate Statistical Methods in fMRI. *Magn. Reson. Med.* 49:1152-1162 (2003).
- R. Nandy and D. Cordes. A Novel Nonparametric Approach to Canonical Correlation Analysis with Applications to Low CNR Functional MRI Data. *Magn. Reson. Med.* 50:354-365 (2003).
- L. Stanberry, R. Nandy, D. Cordes. Cluster Analysis of fMRI Data using Dendrogram Sharpening. *Hum Brain Mapp* 20:201-219(2003).
- R. Nandy and D. Cordes. Improving the Spatial Specificity of Canonical Correlation Analysis in fMRI. *Magn. Reson. Med.* 52:947-952 (2004).
- R. Nandy and D. Cordes. New Approaches to ROC Methods in Functional Magnetic Resonance Imaging with Real Data using Repeated Trials. *Magn. Reson. Med.* 52:1424-1431 (2004).
- B. Keogh, D. Cordes, L. Stanberry, B. Figler, C. Robbins, C. Green, B. Tempel, A. Emmi, K. Maravilla, P. Schwartzkroin. BOLD-fMRI imaging of PTZ-induced seizures in rats. *Epilepsy Research* 66:75-90 (2005).
- D. Cordes and R. Nandy. Estimation of the Intrinsic Dimensionality of fMRI Data. *Neuroimage* 29:145-154 (2006).
- L. Stanberry, T. Richards, V. Berninger, R. Nandy, E. Aylward, K. Maravilla, D. Cordes. Low-frequency signal changes reflect differences in functional connectivity between good readers and dyslexics during continuous phoneme mapping. *Magn. Reson. Imag.* 24:217-229 (2006).
- R. Nandy and D. Cordes. A Semi-Parametric Approach to Estimate the Family-Wise Error Rate in fMRI using Resting-State Data. *Neuroimage* (in press 2006).
- L. Stanberry, A. Murua, D. Cordes. Functional Connectivity Mapping using the Ferromagnetic Potts Spin Model. *Human Brain Mapping* (accepted 2006).

Book Chapters:

- P. Turski, D.Cordes, B. Mock, G. Wendt, J. A. Sorenson, M. Quigley, C. Strother, R. Dempsey. Basic Concepts of fMRI and Arteriovenous Malformations. *Magn Reson Imaging Clin N Am* 6:801-810 (1998).
- P. Turski, D.Cordes, B. Mock, G. Wendt, J. A. Sorenson, M. Quigley, C. Strother, R. Dempsey. Basic Concepts of Functional Arteriovenous Malformations. *Neuroimaging Clin N Am* 8:371-381 (1998).
- V. Haughton, C. Moritz, M. Meyerand, K. Arfanakis, D. Cordes. Chapter 5, Mapping Brain Function with MRI. Latchaw/Kucharczyk/Moseley. *Diagnostic and Therapeutic Imaging of the Nervous System*. Elsevier (2004).
- C. Green, V. Haughton, D. Cordes. Independent Component Analysis and fMRI Imaging, in *Functional MRI: Basic Principles and Clinical Applications*, eds: S. Faro and M. Mohamed, Springer NY (2005).

C. Research Support (last 3 years)

Current

5P50HD033812-10

Berninger (Program PI)
Richards (PI, Project IV – Brain Imaging)

03/01/96 - 11/30/2010

NIH/NICHHD

Learning Disabilities: Links to Schools and Biology

The major goal of this project is to use MR spectroscopy and functional MRI to study brain activation in children with learning disabilities.

Role: Co-Investigator, Brain Imaging

5P30HD002274-38

Guralnick (Program PI)

08/01/89 - 6/30/2009

NIH/NICHHD

Research in Mental Retardation and Child Development

This grant supports five scientific core facilities and one administrative core to enhance the effectiveness of scientists carrying out their research as part of our MRDDRC. The scientific core support facilities are as follows: (1) Genetics, (2) Neuroscience, (3) Behavioral Science, (4) Infant Primate Research Laboratory, and (5) Instrument Development Laboratory.

Role: Investigator, Brain Imaging in Neuroscience Core

Completed

Cordes (PI)

10/1/2002 - 9/30/2003

Royalty Research Fund, University of Washington

Using independent component analysis to analyze functional MR data.

The major goals of this project were to develop a new dimensionality-reduction method for analyzing functional MR data using Independent Component Analysis.

Role: PI

Pending

NIA R21 grant: Functional MRI and Alzheimer's disease (score 154 (12.6%)). Cordes (PI) 12/1/2006-11/30/2008

The overall goal of this project is to obtain an accurate statistical map of memory activation in the hippocampus (and associated structures in the limbic system) in older subjects, age 60 to 75. The successful completion of our objectives would lead to an fMRI-based diagnostic test for memory impairment to help characterize abnormal memory function in people at risk for Alzheimer's disease.