

## CURRICULUM VITAE

**Karl Young**

### **EDUCATION**

San Francisco State University, San Francisco, CA Physics, Mathematics, B.A, Honors  
University of California, Santa Cruz, Santa Cruz, CA Physics, Ph.D.

### **Postgraduate Training**

NASA Ames Research Center, Mountain View, CA NRC Postdoctoral Fellowship

### **LICENSES, CERTIFICATIONS, ETC.**

Microprocessor Interfacing Specialist, INTEL, Santa Clara, CA  
Parallel Programming Certificate, NPACI Parallel Computing Institute, San Diego, CA  
IDL Programming Certificate, Research Systems, Boulder, CO  
Certificate, Modern Regression and Classification Course, T. Hastie and R. Tibshirani, Stanford, CA  
Statistics In High Dimensions Workshop, Mathematical Sciences Research Institute, UC Berkeley  
Markov Chain Monte Carlo Workshop, Mathematical Sciences Research Institute, UC Berkeley

### **EMPLOYMENT**

Positions held after completion of postgraduate training:

1988 – 1991	Physics Department, UC Berkeley	Research Assistant
1993 – 1996	Stanford Linear Accelerator Center	Research Physicist, SLD Project
1996 – 2001	Radiology, UCSF	Research Physicist
2001 – 2003	Stanford Linear Accelerator Center	Research Physicist, GLAST project
2003 – 2010	Radiology, UCSF	Assistant Adjunct Professor

### **HONORS AND AWARDS**

1984 President, SF State Chapter of the Student Branch of the American Physical Society  
1993 National Research Council Fellowship

### **KEYWORDS/AREAS OF INTEREST:**

study and simulation of complex systems, data mining, applied information theory, image informatics, statistical image processing, parallel processing, magnetic resonance physics, magnetic resonance spectroscopic imaging

### **PROFESSIONAL ACTIVITIES**

### **SUMMARY OF PROFESSIONAL ACTIVITIES:**

Scientific research in a number of areas as demonstrated by a strong publication record in a wide range of high quality journals.

Extensive computer programming and programming support activities for my own projects and those of colleagues at the Stanford Linear Accelerator Center and the Center for Imaging of Neurodegenerative Diseases.

Design, construction, maintenance, and programming of a high performance parallel processing cluster at the Center for Imaging of Neurodegenerative Diseases.

Design and purchase of computer and computer infrastructure equipment systems at the Center for Imaging of Neurodegenerative Diseases.

## ***PROFESSIONAL ORGANIZATIONS***

### *MEMBERSHIPS IN SCIENTIFIC PROFESSIONAL ORGANIZATIONS*

American Physical Society  
Society of Magnetic Resonance in Medicine  
New England Complex Systems Institute

### *SERVICE TO PROFESSIONAL ORGANIZATIONS*

Physical Review	ad hoc reviewer
Magnetic Resonance in Medicine	ad hoc reviewer
Magnetic Resonance Imaging	ad hoc reviewer
Human Brain Mapping	ad hoc reviewer
IEEE Transactions on Medical Imaging	ad hoc reviewer
Neuroimage	ad hoc reviewer
National Institutes of Health	ad hoc grant reviewer

## **INVITED LECTURES**

- 1988 “*Computation at the Onset of Chaos*”,  
SFI Workshop on Complexity, Entropy, and The Physics of Information, Santa Fe Institute
- 1990 “*Complexity Based Modeling of Dynamical Systems*”,  
San Francisco State University
- 1991 “*Measuring the Dynamical Entropy and Complexity of Time Series*”  
NASA Ames
- 1991 “*Fluctuation Spectroscopy*”  
Dynamics Days, Austin, TX
- 1992 “*SCO-XI: A Dripping Handrail ?*”  
Los Alamos National Laboratory

- 1993 “*Accretion in Binary Stars*”  
Stanford Linear Accelerator Center
- 1998 “*Complexity Based Classification of Magnetic Resonance Spectroscopic Images*”  
Santa Fe Institute
- 1998 “*Bayesian Probability*”  
UCSF/VA Research Seminar
- 2000 “*Data Mining Magnetic Resonance Spectroscopic Image Data*”  
Santa Fe Institute
- 2003 “*Information Theoretic Classification*”  
Machine Learning Group, Stanford University
- 2004 “*Global MR Diagnostic Tools Via Statistical Complexity Measures*”  
International Conference on Complex Systems, Boston, MA
- 2005 “*Complexity Based Diagnostic Classification*”  
Center for the Study of Complex Systems, University of Michigan
- 2005 “*Summarizing Complexity in High Dimensions*”  
Machine Learning Group, Stanford University
- 2005 “*Complexity Based Classification*”  
MRS Unit WARP Seminar, UCSF
- 2005 “*Complexity Based Classification of Multimodal Medical Images*”  
Cognitive Neuroscience Seminar, UCSF
- 2006 “*Neuro-Fuzzy Systems In Medical Imaging*”  
CIND WARP Seminar, UCSF
- 2006 “*Complexity Based Analysis of Neurodegeneration*”  
Cognitive Neuroscience Seminar, UCSF
- 2006 “*Multimodal MR Analysis*”  
Santa Clara University
- 2006 “*Data Mining of Multimodal MR Data*”  
NASA Data Mining Conference
- 2007 “*Quantifying Structure and Function in Brain Images with Information Theory*”  
American Statistical Association
- 2008 “*Structural Complexity in Magnetic Resonance Images of the Brain*”  
UC Davis

**TEACHING and MENTORING****FORMAL SCHEDULED CLASSES:**

QTR	Academic Year	Course No. & Title	Teaching Contribution	Units	Class Size
Sp	1984	Physics 121 - Introductory Physics San Francisco State University	36 one hour lectures	3	65
Su	1984	Physics 141 - Introductory Physics with Calculus San Francisco State University	36 one hour lectures	3	70
F	1991	Physics 703 – Graduate Advanced Classical Mechanics San Francisco State University	32 one hour lectures	3	15
F	1995	Physics 701 – Graduate Classical Mechanics San Francisco State University	32 one hour lectures	3	10
W	2005-06	Radiology 170.03: Medical Imaging Informatics UCSF	Lecturer: three 120 minute lectures plus design of syllabus	2	5
W	2006-07	Radiology 170.03: Medical Imaging Informatics UCSF	Lecturer: three 120 minute lectures plus design of syllabus	2	6
W	2007-08	Radiology 170.03: Medical Imaging Informatics UCSF	Lecturer: three 120 minute lectures plus design of syllabus	2	4
W	2008-09	Radiology 170.03: Medical Imaging Informatics UCSF	Lecturer: four 120 minute lectures plus design of syllabus	2	14
Su	2009	Radiology 170.06: Statistical Methods for Radiology and Biomedical Imaging, UCSF	Lecturer: one 120 minute lecture	2	15

**OTHER COURSES:**

Seminars on Statistical Complexity and Information Theory, Center For Imaging of Neurodegenerative Diseases

**RESEARCH AND CREATIVE ACTIVITIES****RESEARCH AWARDS AND GRANTS****GRANT ACTIVITY SUMMARY***Primary research as PI:*

I was Principal Investigator of a currently funded Department of Defense (DOD) Grant entitled “Information theoretic analysis for sensitive detection of structural and metabolic patterns in multimodal MR image studies of head trauma”. I was joint Principal Investigator with Dr. Brian Soher of Duke University on a recently funded R01 grant entitled “MrSPA: Integrated analysis/development platform for magnetic resonance research”.

*Collaborative work:*

I have been a major contributor on many individual NIH R01 proposals as well as large scale program project style applications such as the successful multi-center MIDAS spectroscopic imaging project led by Dr. Andrew Maudsley and an innovative MR pulse and sequence design project led by Dr. Gerald Matson.

### Grant Awards

DOD (PI Young)

08/01/08 - 07/31/10

Information Theoretic Analysis for Sensitive Detection of Structural and Metabolic Patterns in Multimodal MR Image Studies of Head Trauma.

The overall aim of this proposal is to develop sensitive diagnostic markers for mild and moderate traumatic brain injury using information theory based complexity/texture measures from multimodal MR images.

**Role: PI**

NIH 1R01 EB008387-01A1 (PI Young/Soher)

04/01/09 - 03/31/12

MrSPA: Integrated Tools and Development Platform for Magnetic Resonance Research.

The overall aims of this proposal is to extend the maintenance and development of three magnetic resonance spectroscopy (MRS) software tools by migrating them into an integrated, open source, open development platform.

**Role: PI**

### Grant Collaborations

DOD (PI Schuff)

03/01/10 – 02/28/12

Multivariate Brain Imaging Analysis in PTSD

**Role: CoI**

Michael J. Fox Foundation MJFF-BM2007 (PI Schuff)

02/01/08-01/31/10

Multimodal MRI Markers for Parkinson's Disease

**Role: CoI**

NIH/NIBIB R01 EB00766 (PI Matson)

09/30/02 - 06/30/07

Human Brain Proton Metabolite Mapping at Short TE (MRI) at short TE.

**Role: CoI**

NIH/NIBIB R01 1R01EB00822 (PI Maudsley)

07/01/02 - 12/30/07

Partnership for MR spectroscopic Imaging Data Processing: Project 4 (Schuff)

**Role: CoI**

NIH/NIBIB R01 EB00207, previously AG12119 (PI Maudsley)

2/1/96 - 1/31/04

Data Processing for MRSI

**Role: CoI**

**SELECTED PEER REVIEWED MANUSCRIPTS**

C. L. Hodges, P. Abrams, A. R. Baden, R. W. Bland, D. C. Joyce, J. P. Royer, F. W. Walters, E. G. Wilson, P. G. Y. Wong, **K Young**. Results of a search for fractional charges on mercury drops. *Physical Review Letters* 47:1651-1653 (1981).

J.P. Crutchfield, **K. Young**. Inferring statistical complexity. *Physical Review Letters* 63:105-108 (1989).

J.P. Crutchfield, **K. Young**. Computation at the onset of chaos. *Complexity, Entropy and the Physics of Information*. 223-270. W. Zurek, editor, Addison-Wesley (1990).

J.D. Scargle, D.L. Donoho, J.P. Crutchfield, T. Steiman-Cameron, J. Imamura, **K. Young**. The quasi-periodic oscillations and very low frequency noise of scorpius x-1 as transient chaos: a dripping handrail? *Astrophysical Journal*. 411:91-94 (1993).

**K. Young**, J.P. Crutchfield. Fluctuation spectroscopy. *Chaos, Solitons, and Fractals*, 4:5-39 (1994).

T. Steiman-Cameron, **K. Young**, J.D. Scargle, J.P. Crutchfield, J. Imamura, M.T. Wolff, K.S. Wood. Dripping handrails and the quasi-periodic oscillations of the am herculis objects. *Astrophysical Journal*. 435:775-783 (1994).

**K. Young**, J.D. Scargle. The dripping handrail model: transient chaos in accretion systems. *Astrophysical Journal* 468:617-632 (1996).

**K. Young**, V.Govindaraju, B.J. Soher, A.A.. Maudsley. Automated spectral analysis I: Formation of a priori information by spectral simulation. *Magnetic Resonance in Medicine* V40:812-815 (1998).

**K. Young**, B.J. Soher, A.A. Maudsley. Automated spectral analysis II: Application of wavelet shrinkage for characterization of non-parameterized signals. *Magnetic Resonance in Medicine* V40:816-821 (1998).

B.J. Soher, **K. Young**, V.Govindaraju, A.A. Maudsley. Automated spectral analysis III: Application to in vivo proton MR spectroscopy and spectroscopic imaging. *Magnetic Resonance in Medicine* V40:822-831 (1998).

**K. Young**, G.B. Matson, V.Govindaraju, A.A. Maudsley. Spectral simulations incorporating gradient coherence selection. *Journal of Magnetic Resonance* V140:146-152 (1999).

J. Kent-Braun, A. Ng, **K. Young**. Skeletal muscle contractile and non-contractile components in young and older women and men. *American Journal of Physiology* V88:662-668 (2000).

V.Govindaraju, **K. Young**, A.A. Maudsley. Proton NMR chemical shifts and coupling constants for brain metabolites. *NMR in Biomedicine* V13:129-153 (2000).

**K. Young**, D. Khetsilius, B.J. Soher, A.A. Maudsley. Confidence images for spectroscopic imaging. *Magnetic Resonance in Medicine* V44:537-545 (2000).

B. J. Soher, **K. Young**, A.A. Maudsley. Representation of strong baseline contributions in 1H MR spectra. *Magnetic Resonance in Medicine*. V45:966-972 (2001).

J. Kornak **K. Young**, A.A. Maudsley. Improved Reconstruction of Spectroscopic Images Using Segmented MRIs. In K.V. Mardia, and R.G. Aykroyd, *Functional and Spatial data Analysis*. Department of Statistics, University of Leeds. 149 (2001).

T.H. Burnett, A. Chekhtman E. Do Couto E Silva, R. Dubois, R. D.Flath, I. Gable, J. E. Grove, R. C. Hartman, T. Kamae, A. Kavelaars, H. Kelly, T. Kotani, M. Kuss, D. Lauben, T. Lindner, N. Lumb, T. Mizuno, A. Moiseev, M. Ozaki, L. S. Rochester, R. Schaefer, G. Spandre, D. J. Thompson, T. Usher, **K. Young**. Gamma-ray Large-Area Space Telescope (GLAST) balloon flight data handling overview. *EEE Transactions on Nuclear Science*, vol. 49, issue 4, pp. 1904-1908 (2002).

J. Kornak, **K. Young**, N. Schuff, A.A. Maudsley, M.W. Weiner. Bayesian reconstruction of low resolution magnetic resonance imaging modalities In R.G. Aykroyd, S. Barber, & K.V. Mardia, *Bioinformatics, Images, and Wavelets*. Department of Statistics, University of Leeds. 89 (2004).

Maudsley, V. Govindaraju, **K. Young**, Z. K. Aygula, P.M. Pattany, B. J. Soher. G. B. Matson. Numerical Simulation of PRESS Localized MR Spectroscopy. *Journal of Magnetic Resonance* V173:54-63 (2005).

**K. Young**, Y. Chen, J. Kornak, G. B. Matson, N. Schuff. Summarizing Complexity in High Dimensions. *Physical Review Letters* 94:098701:1-4 (2005).

X.P. Zhu, **K. Young**, A. Ebel, B.J. Soher, L. Kaiser, G. Matson, W.M. Weiner, N. Schuff. Robust analysis of Short Echo Time 1H MRSI of human Brain. *Magnetic Resonance in Medicine* V55:706-711 (2006).

Maudsley, A. Darkazanli, J. Alger, L. Hall, N. Schuff, C. Studholme, Y. Yu, A. Ebel, A. Frew, D. Goldgof, Y. Gu, R. Pagare, F. Rousseau, K. Sivasankaran, B. Soher, P. Weber, **K. Young**, X. Zhu. Comprehensive processing, display and analysis for in vivo MR spectroscopic imaging. *NMR in Biomedicine*. 19(4):492-503 (2006).

Soher, **K. Young**, A. Bernstein, Z. Aygula, A.A. Maudsley. GAVA: Spectral Simulation for in Vivo MRS Application. *Journal of Magnetic Resonance*. 85(2):291-299 (2007).

L. Kaiser, **K. Young**, G. Matson. Elimination of spatial interference in PRESS-localized editing spectroscopy. *Magnetic Resonance in Medicine* 58(4):813-818 (2007).

Raj, **K. Young**, K. Thakur. Deducing Local Influence Neighbourhoods With Application to Edge-Preserving Image Denoising. 6th IAPR -TC-15 Graph-based Representations in Pattern Recognition:180 (2007).

L. Kaiser, **K. Young**, S. Muller, D. Myerhoff, G. Matson. A detailed analysis of localized J-difference GABA editing: Theoretical and experimental study at 4 Tesla. *NMR in Biomedicine*. 21(1):22-32 (2008).

**K. Young**, N. Schuff. Measuring Structural Complexity in Brain Images. *Neuroimage*. 39(4):1721-1730 (2008).

L.G. Kaiser, **K. Young**, G.B. Matson. Numerical simulations of localized high field (1)H MR spectroscopy. *Journal of Magnetic Resonance*. 195(1):67-75 (2008).

**K. Young**. Summarizing Complexity in High Dimensional Spaces. *SciPy 2008*: 66-69 (2008)

**K. Young**, A. Du, J. Kramer, H. Rosen, B. Miller, M. Weiner, N. Schuff. Patterns of Structural Complexity in Alzheimer's Disease and Frontotemporal Dementia. *Human Brain Mapping*. 30(5):1667-77 (2009).

J. Kornak, **K. Young**, N. Schuff, A. Du, A. A. Maudsley, M. W. Weiner. K-Bayes Reconstruction for Perfusion MRI I: Concepts and Application. *Journal of Digital Imaging*. (2009) Feb 10

J. Kornak, **K. Young**. K-Bayes Reconstruction for Perfusion MRI II: Modeling Motivation and Technical Development. *Journal of Digital Imaging*. (2009) Mar 10

G.B. Matson, **K. Young**, L. G. Kaiser. RF Pulses for In Vivo Spectroscopy at High Field Designed Using Optimal Control. *Journal of Magnetic Resonance*. 199(1):30-40. (2009).

M. Nezamzadeh, V. Wedeen, R. Wang, Y. Zang, Z. Wang, **K. Young**, N. Schuff. In-Vivo Investigations of the Human Cingulum Bundle Using the Optimization of MR Diffusion Spectrum Imaging. *Eur J Radiol*. 2009 Jul 15

Kornak J, **Young K**, Soher BJ, Maudsley AA. Bayesian k-space-time reconstruction of MR spectroscopic imaging for enhanced resolution. *IEEE Trans Med Imaging*. 2010 Jul;29(7):1333-50.

**K Young**, V Govind, K Sharma, C Studholme, AA Maudsley, N Schuff. Multivariate statistical mapping of spectroscopic imaging data. *Magn Reson Med*. 63(1):20-4. (2010)

L. Kaiser, M. Marjańska, G. B. Matson I. Iltis, S. D. Bush, B. Soher, S. Mueller, **K. Young**. 1H MRS Detection of Glycine Residue of Glutathione In-Vivo. *Journal of Magnetic Resonance*. 202(2):259-66. (2010)

Nezamzadeh M, Matson GB, **Young K**, Weiner MW, Schuff N. Improved pseudo-continuous arterial spin labeling for mapping brain perfusion. *Journal of Magnetic Resonance*. 31(6):1419-27. (2010)

Raj A, Mueller SG, **Young K**, Laxer KD, Weiner M. MW Weiner. Network-Level Analysis of Cortical Thickness of the Epileptic Brain. *Neuroimage*. 2010 Oct 1;52(4):1302-13.

Mueller SG, **Young K**, Hartig M, Barakos J, Garcia P, Laxer KD. A two-level multimodality imaging Bayesian network approach for classification of partial epilepsy: preliminary data. *Neuroimage*. 2013 May 1;71:224-32.

Submitted:

Friedman E, **Young K**, Tremper K, Liang J, Landsberg A. Directed Network Motifs from MRI Cortical Thickness as Markers In Alzheimer's Disease and Mild Cognitive Impairment

**Young K**, Kornak J. Information Theoretic Identification of Diffuse Axonal Injury. Medical Image Analysis.

**NON-PEER REVIEWED PUBLICATIONS AND OTHER CREATIVE ACTIVITIES**

PhD Thesis

**K. Young**, The Grammar and Statistical Mechanics of Complex Physical Systems Thesis University of California, Santa Cruz (1991).

Book Reviews

**K. Young**. Chaotic Dreams. Hungry Mind Review, B. Schneider, editor, (1995)

Book Chapters

**K. Young**. Deterministic chaos and quantum chaology. Published in "Religion And Science: history, method, dialogue", M. Richardson and W. Wildman, editors , Routledge (1996).

Magazine Articles

**K. Young**. Confessions of a Medical Imager. Speakeasy Literary Review, B. Schneider, editor, (2006).

Patents Issued Or Pending

**K. Young**, J. Morales, A. Islas. Complexity Based RNA Analysis. (pending)

Y. Chen, **K. Young**, T. Schleich G. B. Matson. Slice Selective Pulses Suitable for Multislice MRI with Immunity to RF Inhomogeneity. (pending)

Selected Conference proceedings and Symposia

Kornak, J., and **Young, K.** – On the comparison of analytic optimization algorithms for the reconstruction of low-resolution k-space data in high-resolution transformed space. *Proceedings of CMM 2005 – Computational Methods in Mechanincs, Czestochowa, Poland, 2005.*

Selected Peer Reviwed Abstracts

N. Schuff, D.L. Amend, A. Capizzano, B.J. Soher, **K. Young**, A.A. Maudsley, F. Ezekiel, G. Fein, M.W. Weiner. NAA reductions in parietal and frontal cortex of Alzheimer's disease. Proc. of the Int. Soc. for Mag. Res. In Med. (1998).

B.J. Soher, **K. Young**, V. Govindaraju, A.A. Maudsley. Automated Spectral Analysis and Formation of Metabolite Images for 1H MRSI. 6th Meeting ISMRM, Sydney. (1998).

- B.J. Soher, **K. Young**, V. Govindaraju, A.A. Maudsley. Analysis of Short TE 1H Spectra Using Spectral Simulation and Wavelet Baseline Characterization. 6th Meeting ISMRM, Sydney, (1998).
- N. Schuff, D. Amend, W.D. Rooney, D.F. Gelinas, R. Miller, B.J. Soher, **K. Young**, A.A. Maudsley, G. Fein, M.W. Weiner. Quantitative Assessment of NAA Reductions in the Motor Cortex of Amyotrophic Lateral Sclerosis. 6th Meeting ISMRM, Sydney. (1998).
- N. Schuff, B.J. Soher, **K. Young**, F. Ezekiel, D.L. Amend, G. Fein, M.W. Weiner. Regression and histogram analysis of 1H MR spectroscopic imaging data. Proc. of ISMRM, Sydney. (1998).
- V. Govindaraju, B.J. Soher, K. Young, A. A. Maudsley. Simulation and use of a priori information for in vivo spectral analysis. Experimental NMR (ENC) conference, March 22-27, Asilomar, California. (1998).
- K. Young**, V. Govindaraju, A.A. Maudsley, D.J. Meyerhoff. T2 measurement of j-coupled spin systems using volume localization. Proc. of ISMRM, Sydney. (1999).
- V. Govindaraju, B. J. Soher, **K. Young**, A.A. Maudsley. Automated analysis of in vitro 1H NMR spectra using simulated basis functions. 8th meeting ISMRM, Denver. (2000).
- V. Govindaraju, B.J. Soher, **K. Young** and A.A. Maudsley. Automated spectral analysis using simulated a priori information. Proceedings, 36th ACS Western Regional Meeting, San Francisco, (2000).
- B.J. Soher, **K. Young** and A.A. Maudsley. Comparison of Methods for Baseline Characterization of In Vivo 1H MR Spectra. Proceedings, ISMRM (2000).
- D. Khetselius, **K. Young**, B.J. Soher and A.A. Maudsley. Confidence Images for MR Spectroscopic Imaging. Proceedings, ISMRM (2000).
- J. Kornak, **K. Young**, A.A. Maudsley. Enhancement of Spectroscopic Images using Segmented MRIs, Leeds Annual Statistical Research Workshop (2001).
- W. Focke, E. Bloom, E. do Couto E. Silva, L. Wai, **K. Young**, A. Moriselli, A. Lionetto, A. Cesarini, F. Fucito, P. Ullio. GLAST LAT Dark Matter Detection Feasibility Studies. American Physical Society, April Meeting (2002).
- K. Young (oral presentation)**, R. Dubois, A. Schlessinger. Batch Pipeline And Audit Tracking for Large Scale Data Simulation of GLAST detector, International Conference on Computing in High Energy Physics (2003).
- Z. Aygula, B.J. Soher, **K. Young**, A.A. Maudsley. GAVA – A graphical pulse sequence simulation, display and storage environment, ISMRM (2003), p 852
- K. Young (oral presentation)**, J. Kornak, Y. Chen, A. Maudsley, N. Schuff. Global MR Diagnostic Tools Via Statistical Complexity Measures, International Conference on Complex Systems (2004).

Y. Chen, **K. Young**, T. Schleich G. B. Matson. Frequency Selective RF Pulses for Multislice MRI with Modest Immunity to B1 Inhomogeneity and to Resonance Offset, ISMRM, Toronto (2004).

X.P. Zhu , N. Schuff, **K. Young**, B. Soher, M. Weiner. Regional Distribution of Abnormal Brain ((Metabolite Levels)) in AD by MR Spectroscopic Imaging at Short Echo Times, Alzheimer's Association 9th International Conference on Alzheimer's Disease and Related Disorders (2004).

L. G. Kaiser, **K. Young**, B. J. Soher, M. W. Weiner. Macromolecular and Lipid Contributions in Short Echo Time 1H MRS at 4 Tesla: 1) Reliability in Normal Controls and 2) Comparative Study Between Amyotrophic Lateral Sclerosis Patients and Controls, ISMRM, Miami, (2005).

X.P. Zhu, **K. Young**, B. J. Soher, H. Yin, F. Ezekiel, M. W. Weiner, N. Schuff. New Spectral Analysis of Short Echotime Multislice 1H MRSI in Human Brain using Eigen Spectra, Baseline Correction and Frequency Alignment, ISMRM, Miami, (2005).

V. Govindaraju, **K. Young**, Z. K. Aygula, P. M. Pattany, B. J. Soher, G. B. Matson, A. A. Maudsley. Spectral Simulations Incorporating Spatially-dependent Variables for PRESS Localized Spectroscopy, ISMRM, Miami, (2005).

**K. Young**, T Schleich, G. B. Matson, Y. Chen. Comparison of FEM Calculations Obtained Using FEMLAB to Analytical Calculations of Transmission and Reception Fields in MRI. ECM, Rhode Island (2005).

Y. Chen, **K. Young**, G.. B. Matson. Potential of the Regularized Resolvent Transform (RRT) for Use with J-Resolved In Vivo Spectra. ENC, Rhode Island (2005).

J. Kornak, **K. Young**. On the comparison of analytic optimisation algorithms for the reconstruction of low-resolution k-space data in high-resolution transformed space, Computer Methods in Mechanics (2005).

**K. Young (oral presentation)**, N. Schuff, Complexity Based Classification of Neurodegeneration. ISMRM, Seattle (2006).

G. B. Matson, L. G. Kaiser, **K. Young**. Slice-Selective RF Pulse Cascades for Uniform Tipping in Inhomogeneous RF Fields. ENC (2007).

**K. Young**, N. Schuff, A. Du, J. Lerch, A. Evans, G. Bartzokis, B. Miller, M. Weiner. Detection and Classification of Dementias Using Generalized Complexity Estimates. Alzheimer's Foundation (2007).

**K. Young**, A. Du, J. Kramer, H. Rosen, B. Miller, M. Weiner, N. Schuff. Patterns of Structural Complexity in Alzheimer's Disease and Frontotemporal Dementia. UCSF Radiology Day (2007)

**K. Young**, P. Weber, V. Govindaraju, K. Sharma, A. Darkazanli, C. Studholme, L. Hall, A.A Maudsley, N. Schuff. Multivariate Statistical Mapping of Spectroscopic Imaging Data, ISMRM, Toronto, (2008).

\* **K. Young (oral presentation)**, A. Du, J. Kramer, H. Rosen, B. Miller, M. Weiner, and N. Schuff. Estimating Structural Complexity Changes in Alzheimer's Disease and Frontotemporal Dementia. Human Brain Mapping, Melbourne (2008).

**K. Young (oral presentation)**. Summarizing Complexity in High Dimensional Spaces. SciPy (2008).

\* Selected as a featured presentation.