

## STUDY GROUP SESSION

**Title:** MR Engineering

**Day:** Monday, 24 April 2017

**Time:** 16:15 - 18:15

**Room #:** Rm 323ABC

**Study Group Chair,** Steven M. Wright, Ph.D.; **Vice Chair,** Nicola De Zanche, Ph.D.; **Secretary,** Joseph Murphy-Boesch, Ph.D.;

**Committee:** Trainee Representative, Simone A Winkler, Ph.D.; Past Chair, Fraser J. L. Robb, Ph.D.

**2017-2018 Incoming Committee :** Secretary, Alexander J. E. Raaijmakers, Ph.D.; Trainee Representative, Natalia Gudino, Ph.D.

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16:15	Introduction - Welcome & Business Meeting	MR Engineering Committee
16:20	Remembering Graham Wiggins	<b>Christopher J. Wiggins, Ph.D.</b> Scannexus B.V., The Netherlands <b>Daniel K. Sodickson, M.D., Ph.D.</b> New York University School of Medicine, USA <b>Lawrence L. Wald, Ph.D.</b> A.A. Martinos Center MGH, USA
16:35	Open Source Imaging Initiative (OSI <sup>2</sup> ) – An Engineering Perspective	Lukas Winter, Ph.D. Max-Delbrück Center for Molecular Medicine, Germany
16:50	MARIE: MATLAB-Based Open Source Software for the Fast Electromagnetic Analysis of MRI Systems	José E.C. Serrallés, M.Eng. Massachusetts Institute of Technology, USA
17:05	gr-MRI: Our experience Developing & Publishing Open-Source Spectrometer Software	William A. Grissom, Ph.D. Vanderbilt University, USA
17:20	Traditional & Electronic Poster Session - 1st Viewing	
17:45	Traditional & Electronic Poster Session - 2nd Viewing	
18:10	Best Presentation Vote	
18:15	Adjournment	
	<b>Group 1 Electronic Poster Viewing</b>	
	<i>Ultra-High Field RF Coils with Adjustable Longitudinal Coverage: Traveling-Wave Meets Standing-Wave</i>	Xinqiang Yan, Ph.D. Vanderbilt University, USA
	<i>Experimental Realization of a Novel Dual-Nuclei Coil for Small Animal Imaging at 7 Tesla Based on Periodic Structures of Metal Strips</i>	Anna A. Hurshkainen, M.Sc. ITMO University, Russian Federation
	<i>Wireless Q-spoiling of Receive Coils at 1.5T MRI</i>	Jonathan Y. Lu, M.Sc. Stanford University, USA
	<i>A MRI Compatible Class-EF Power Amplifier Designed to Drive a Wireless Power Transfer System</i>	Kelly F. Byron, M.E.Eng. Stanford University, USA
	<i>Design of an MRI Gradient Field Exposure System for Medical Device Testing</i>	Daniel J. Martire, B.Sc. University of Western Ontario, Canada
	<i>Prototype Hardware of FPGA Controlled Multi-Channel All-Digital RF Transmitter for Parallel Magnetic Resonance Imaging</i>	Filiz E. Filci, M.Sc. Aselsan Inc., Turkey
	<b>Group 2 Electronic Poster Viewing</b>	
	<i>Battery-Powered Integrated Parallel Reception, Excitation, and Shimming (iPRES) Head Coil Array for Plug-and-Play Localized B<sub>0</sub> Shimming</i>	Dean Darnell, Ph.D. Duke University, USA

<i>A Compact Handheld MR Spectrometer System for Mobile MR Applications</i>	Sergei I. Obruchkov, Ph.D. Victoria University of Wellington, New Zealand
<i>Overcoming Limitations of Virtual Observation Points in pTx using IMPULSE</i>	Mihir Pendse, M.Sc. Stanford University, USA
<i>Compact iPRES Coil Assembly for Magnetic Resonance Fingerprinting</i>	Michael D. Twieg, Ph.D. Case Western Reserve University, USA
<i>Combined Transmit Array &amp; 8-channel Receive Coil Array for <math>^{19}\text{F}/^1\text{H}</math> for Human Lung Imaging at 1.5 T Utilizing MEMS Transmit-Receive Detuning</i>	Adam M. Maunder, M.Sc. University of Sheffield, UK
<i>Cardiac Synchronization at Ultra-High Field Using a 3-Lead ECG Trigger Device</i>	Daniel Stäb, Ph.D. University of Queensland
<b>Traditional Poster Presentations</b>	
<i>2D Multi-Spectral Thermometry for Monitoring Focused-Ultrasound Sonications Near Metallic Hardware</i>	Hans Weber, Ph.D. Stanford University, USA
<i>Optical-Based Probe for Real Time Assessment of RF Electrical Field During MRI Exam</i>	Isabelle Saniour, M.Sc. University of Lyon 1, CREATIS, France
<i>Optically Controlled Four-Channel Transceiver for 7T imaging with RF Monitoring Feedback</i>	Natalia Gudino, Ph.D. National Institutes of Health, USA
<i>Dielectric Resonator Antenna Receive Array at 7 Tesla using Detunable Ceramic Resonators</i>	Thomas Ruytenberg, M.Sc. Leiden University Medical Center, The Netherlands
<i>A New Human-Scale Fast Field-Cycling MRI System for Clinical Applications</i>	Peter J. Ross, Ph.D. University of Aberdeen, Scotland
<i>Enhancement of Signal Intensity Using a Wireless Coil for FT-EPR Oximetry Study, Implanted in an Animal Body</i>	Ayano Enomoto, Ph.D. National Institutes of Health, USA
<i>Towards Ultimate Air-Core Magnetometer Sensitivity for Ultra-Low Field MRI: A Design Method</i>	Ruben Pellicer-Guridi, Bio.Med.Eng. The University of Queensland, Australia
<i>Evaluation of a Metasurface Resonator for In Vivo Imaging at 1.5T</i>	Shimul Chandra Saha, Ph.D. MediWiSe, UK
<i>Unilateral Linear Halbach Magnets for Single Sided Magnetic Resonance: Generalized Design Framework &amp; Experimental Validation</i>	Ashvin Bashyam, M.Sc. Massachusetts Institute of Technology, USA
<i>Preliminary Metamaterial Design &amp; Fabrication for MRI at 3T</i>	Chao Luo, M.Sc. Shenzhen Institutes of Adv. Technology, China
<i>Distributed Receivers with Hardware-Accelerated Signal Processing: Synchronous Acquisition of Image Data &amp; K-Space Trajectories</i>	Josip Marjanovic, M.E.E. ETH Zurich, Switzerland
<i>A Chronic In Situ Coil System Adapted for Intracerebral Stimulation During MRI in Rats</i>	Dan Madularu, Ph.D. Douglas Mental Health University Institute, Canada
<i>A Convertible Magnet Array &amp; Solenoid Coil for a Portable Magnetic Resonance Imaging (MRI) System</i>	Zhijia Ren, B.Sc. Singapore University of Tech. & Design, Singapore
<i>Open-Source Acquisition-Speed Slice-by-Slice Controller for 32 coil <math>B_0</math> Shimming</i>	Nicolas S. Arango, B.Sc. Massachusetts Institute of Technology
<i>An Open Source PXIe Platform for MRI Instrumentation Development</i>	Robin Dykstra, Ph.D. Victoria University of Wellington, New Zealand
<i>Design of Self-Resonance Modes (SRM) of Monolithic Ultra-High Dielectric Constant (<math>\mu\text{HDC}</math>) Materials &amp; RF Coils for <math>B_1</math> field Enhancement</i>	Sebastian Rupprecht, B.Eng. Penn State College of Medicine Hershey, USA

<i>Reducing the Screening During Transmission Using Non-Linear Properties of High Sensitivity Superconductor Radiofrequency Coils for Magnetic Resonance Micro Imaging</i>	Michel Geahel, M.Sc. CNRS, Université Paris-Sud, France
<i>Optimal Array Configuration for Cerebral Cortex MRI at 7T: Six Center-Fed Dipoles with Two Loops RF Coil Array</i>	Jérémie D. Clément, M.Sc. CIBM, Switzerland
<i>Dynamic <math>B_0</math> Shim Controller for Digital Pre-Emphasis with Sub-Millisecond Update Rate</i>	Paul Chang MPI for Biological Cybernetics, Germany
<i>A Simple Head-Sized Phantom for Realistic System Characterization at 7T</i>	Wyger M. Brink, Ph.D. Leiden University Medical Center, The Netherlands
<i>Minimum Current Ripple in the Gradient Array System by Applying Optimum-Phase Pulse-Width Modulation Pattern</i>	Soheil Taraghinia, M.Sc. UMRAM, Bilkent University, Turkey
<i>Ladder &amp; Overlapped Phased Array Coil Comparison for Neck Imaging at 3 Tesla</i>	Michael J. Beck, M.Sc. University of Utah -UCAIR, USA
<i>Quadrature Head Coil for Brain Imaging at 6.5 mT</i>	Neha Koonjoo, Ph.D. MGH/Martinos Center for Biomedical Imaging, USA
<i>Improved Decoupling for <math>^{13}\text{C}</math> Coil Arrays Using Non-Conventional Matching &amp; Pre-amplifier Impedance</i>	Juan Diego Sanchez Heredia, Ph.D. Technical University of Denmark, Denmark