Ultrahigh Field Magnetic Resonance: Clinical Needs, Research Promises and Technical Solutions

Program Overview

WELCOME

Chair: Thoralf Niendorf, Berlin, Germany
08.45 KEY NOTE: From Cardiovascular Imaging to Fluid Mechanics and Aerodynamics: MRI Takes It All
Sven Otten Grönnemann, University of Rostock, Germany

SCIENTIFIC SESSION I

Chair: Jutta M. Ellermann, Minneapolis, USA
09.10-09.30 Impact of Magnetic Field Strength on Quantification of Aorta’s Flow Volumes, Peak Velocity and Wall Shear Stress using 4D Flow MRI
Stephanie Funk, Charité - Universitätsmedizin Berlin, Germany
09.30-09.50 Towards In Vivo Electrolyte Mapping of the Human Heart: Enabling Technology for Sodium and Potassium MRI at 7.0 T
Daniel Weiss, Max Delbrück Center for Molecular Medicine, Berlin, Germany
09.50-10.10 Myocardial T2* Mapping at 7 T: Deciphering the Molecular Meaning of the UHF-MRI Imaging Findings
Min-Chi Ku, Max Delbrück Center, Berlin, Germany
10.10-10.20 Poster Power Session
A 3D high resolution MRI method for visualization of fibro-fatty infiltration in arrhythmogenic right ventricular cardiomyopathy (ARVC) in human heart.
Kilian Haliot, University of Bordeaux, France
A simple method for improving cardiac magnetic resonance imaging in the small and fast beating heart at 9.1 T
Luana Fernandes, Max Delbrück Center, Berlin, Germany
Intercarinal flow measurements at 7.0 T gated with Doppler ultrasound
Karim Markenroth Bloch, Lund University, Sweden
Enabling Technology for Imaging myocardial remodeling in humanized HCM mouse models
Min-Chi Ku, Max Delbrück Center for Molecular Medicine, Berlin, Germany
10.20-11.00 COFFEE BREAK: B.U.F.F.et + Poster Session + Technical Exhibition

SCIENTIFIC SESSION II

Chair: Jeanette Schulz-Menger, Berlin, Germany
11.20-11.40 Pushing UHF-MRI from the Mesoscopic to the Microscopic Scale: Bridging the Gap between Noninvasive Human Imaging and Optical Microscopy
Lawrence Wald, Martinsen Center and Harvard Medical School, Boston, USA
11.40-11.50 Poster Power Session
MP2RAGE with k-Space Shutter and Fat-Navigator Based Motion Correction
Wiesles van der Zwaag, Spinoza Centre for Neuroimaging, Amsterdam, The Netherlands
The impact of multimodal 7 T MRI in presurgical evaluation of patients with severe epilepsy
Ole P. Poulsen, Rigshospitalet, Copenhagen, Denmark
Transient enlargement of brain ventricles in the course of neuroinflammatory disease
Jason Millward, Max Delbrück Center for Molecular Medicine, Berlin, Germany
True 3D resolution RMf of the human visual cortex at 7 T
Kamil Uludag, Maastricht University, The Netherlands
12.00-12.20 LUNCH BREAK: B.U.F.F.et + Poster Session + Technical Exhibition

SCIENTIFIC SESSION III

Chair: Min-Chi Ku, Berlin, Germany
13.40-14.00 Dissecting Functional MRI Signal Source in the Striatum Using Novel Brain Modulation Tools at High Magnetic Field
Yen-Yu Ian Shih, University of North Carolina, Chapel Hill, USA
14.00-14.20 En Route to Precision Medicine: Fluorine-19 MRI at 21.1T to Detect Brain Inflammation
Sonia Waiczies, Max Delbrück Center for Molecular Medicine, Berlin, Germany
14.20-14.40 19F MRI of Brain Oxygenation in a Model of Vascular Cognitive Impairment Using a Cryogenic Radiofrequency Coil
Philipp Böhm-Sturm, Charité - Universitätsmedizin Berlin, Germany
14.40-14.50 Progress in MRI of Small Rodents at Translational Research
Philipp Böhm-Sturm, Charité - Universitätsmedizin Berlin, Germany

15.10-15.30 Poster Power Session
15.10-15.20 Traveling-wave MRI with a parallel-plate cavity resonator at 15.2 T
Alfredo Rodriguez, UAM Iztapalapa, Mexico City, Mexico
15.20-15.30 Multicomponent T2 relaxation analysis in the muscles of Leptin-deficient Zebrafish
Hamed Motahari, University of Leipzig, Germany
Towards secure magnetic based degradable implants: A longitudinal, non invasive follow up in a rat model using structural, functional and metabolic MR information
Martin Miese, Hannover Medical School, Germany
15.30-15.50 Compressed Sensing Improves Detection of Fluorine-19 Nanoparticles in a Mouse Model of Neuroinflammation
Ludger Starke, Max Delbrück Center for Molecular Medicine, Berlin, Germany
15.50-16.15 Fluorine-19 Magnetic Resonance Imaging as a Method for the Individualized Theranostic of Fluorine Labelled Drugs in Neuroinflammation
Christian Prinz, Max Delbrück Center for Molecular Medicine, Berlin, Germany
16.15-16.35 New UHF Musculoskeletal Imaging Applications for the Paediatric and Young Adult Patient Population: Promises and Preliminary Results
Jutta M. Ellermann, CMRR, University of Minnesota, Minneapolis, USA
16.35-16.55 About Metasurfaces and Dielectric Resonators to Improve Imaging at Ultrahigh Fields
Rita Schmidt, Weizmann Institute of Science, Rehovot, Israel
16.55-17.15 Radiofrequency Applicator Concepts for Thermal Intervention and MRI of Glioblastoma Multiforme at 7.0 T (298 MHz)
Dax Oberacker, Max Delbrück Center for Molecular Medicine, Berlin, Germany
17.15-17.35 The UHF-MR Saga Goes On: A Case for Pushing the Field Strength Boundaries with a 10.5 Tesla Human MR System
Kamil Ugurbil, CMRR, University of Minnesota, Minneapolis, USA
17.35-17.55 Toward Clinical Ultrahigh Field Magnetic Resonance: Mission & Vision
Christina Triantafyllou, Siemens Healthcare GmbH, Erlangen, Germany
18.15 Adjourn - buses leaving from the venue for the social event
19.30 Social Event at Stadtbad Oderberger
From ultrahigh to extreme field MRI: Where physics, engineering, physiology and medicine meet
Thoralf Niendorf, Max Delbrück Center for Molecular Medicine, Berlin, Germany

Local organizers: Thoralf Niendorf (MDC, Berlin), Lucio Frydman (Weizmann Institute of Science, Rehovot), Jeanette Schulz-Menger (Charité, Berlin), Min-Chi Ku (MDC, Berlin), Sonia Waiczies (MDC, Berlin), Andreas Pohlmann (MDC, Berlin) Sebastian Schmitter (PTB, Berlin)