



SCMR/ISMRM Jointly  
Sponsored Workshop  
Flow and Motion  
Quantitation and  
Cardiac Study Groups



International Society for Magnetic Resonance  
in Medicine

**Exploring New Dimensions of Cardiovascular Flow and Motion**  
**February 1-2, 2012**  
**Marriott World Center, Orlando, FL**

**Organizing and Scientific Program Committee**

- Noam Alperin, Miami, USA
- Reza Razavi, London, UK
- John Oshinski, Atlanta, USA
- Michael Jerosch-Herold, Boston, USA
- Debiao Li, Los Angeles, USA
- Orlando Simonetti, Columbus, USA
- Alex Frydrychowicz, Madison, USA
- Michael Markl, Chicago, USA

**Wednesday, February 1, 2012**

**Flow and Motion in the Human Body from Head to Toe: State-of-the Art and Emerging Applications**

8:15 am – 8:30 am	<b>Welcome and Introduction</b>
8:30 am – 9:00 am	<b>Keynote Lecture</b> Moderators: Michael Markl, PhD; Orlando Simonetti, PhD Physiology of Blood Flow and Vessel Walls Wilmer W. Nichols, PhD
9:00 am – 10:30 am	<b>Session 1 - Head</b> Moderators: Noam Alperin, PhD; David Saloner, PhD
9:00 am	<i>Intracranial Blood Flow and Aneurysms: In-vivo Flow and Analysis and CFD</i> Vitaliy Raiz, PhD
9:25 am	<i>CSF Flow: Acquisition Strategies and Applications</i> Victor Haughton, MD
9:50 am	Oral Abstract Presentation: <i>4D MR imaging of cerebrospinal fluid flow in Chiari I malformation with and without syringomyelia and flow changes after decompressive surgery</i>
10:02 am	Oral Abstract Presentation: <i>Characterization of cerebral aneurysms using 4D FLOW MRI</i>
10:14 am	Oral Abstract Presentation: <i>4D phase contrast MRI in intracranial aneurysms: A comparison with patient-specific computational fluid dynamics with temporal and spatial velocity boundary conditions as measured with 3D phase contrast MRI</i>
10:30 am	Coffee Break
11:00 am – 12:00 pm	<b>Session 2 - Neck</b> Moderators: Tosiaki Miyati, PhD, DMSc; John Oshinski, PhD
11:00 am	<i>Carotid Plaques: In-vivo Characterization and Computational Fluid Dynamics</i> David Saloner, PhD
11:25am	Oral Abstract Presentation: <i>Respiratory Effects on Phase Contrast Imaging of the Jugular Vein</i>
11:37am	Oral Abstract Presentation: <i>Vectorial wall shear stress calculations in vessel structures using 4D PC-MRI</i>
11:49am	Oral Abstract Presentation: <i>Accuracy of MRI Wall Shear Stress Estimation</i>
12:00 pm – 1:00 pm	Lunch

1:00 pm – 2:30 pm	<b>Session 3 - Great Vessels</b> Moderators: Debiao Li, PhD; Oliver Wieben, PhD
1:00 pm	<i>Blood Flow in the Aorta: 3D Visualization and Quantitative Analysis</i> Tino Ebbers, PhD
1:25 pm	<i>Flow MRI and Modeling in Congenital Heart Disease</i> Mark Fogel, MD
1:50 pm	Oral Abstract Presentation: <i>Flow-sensitive four-dimensional magnetic resonance imaging facilitates the quantitative analysis of systemic-to-pulmonary collateral flow in patients with univentricular hearts</i>
2:02pm	Oral Abstract Presentation: <i>Quantification of Caval contribution to flow in the Right and Left Pulmonary Artery of Fontan patients with 4D Flow MRI</i>
2:14 pm	Oral Abstract Presentation: <i>Assessment of energy loss across aortic valves using accelerated CMR multi-point flow measurements</i>
2:26 pm	Oral Abstract Presentation: <i>Four-dimensional velocity encoded MRI improves blood flow quantification in patients with semilunar valve stenosis</i>
2:30 pm – 3:00 pm	Coffee Break
3:00 pm – 4:40 pm	<b>Session 4 - Abdomen</b> Moderators: James Carr, MD, PhD; Smita Sampath, PhD
3:00 pm	<i>Comprehensive Characterization of Renal Arteries</i> Oliver Wieben, PhD
3:25 pm	<i>Portal Venous and Arterial Hemodynamics</i> TBD
4:00 pm	Oral Abstract Presentation: <i>Quantification of Blood Flow in the Portal Circulation Before and After an Intervention</i>
4:22 pm	Oral Abstract Presentation: <i>Lower extremity amputation increases oscillatory flow in the infrarenal aorta: A new potential risk factor for abdominal aortic aneurysm development</i>
4:24 pm	Oral Abstract Presentation: <i>Repeatability and Internal Consistency of Abdominal 2D and 4D PC MR Flow Measurements</i>
4:40 pm – 5:20 pm	<b>Session 5 - Peripheral Vasculature</b> Moderator: Christopher Macgowan, PhD
4:40 pm-5:05 pm	<i>Flow-sensitive MRI and Non-contrast Enhanced Peripheral MRA</i> James Carr, MD
5:05 pm-5:17 pm	Oral Abstract Presentation: <i>FourFlow - Open Source Code Software for Quantification and Visualization of Time-Resolved Three-Directional Phase Contrast Magnetic Resonance Velocity Mapping</i>
5:20 pm – 7:00 pm	Poster Reception



**Thursday, February 2, 2012**  
**Cardiac Tissue Mechanics & Flow**

8:30 am – 9:00 am	Keynote Lecture Moderators: Michael Jerosch-Herold, PhD; Reza Razavi, MD <i>Physiology and Clinical Importance of Cardiac Function</i> Philip Kilner, MD
9:00 am – 10:30 am	<b>Session 6 - MR Techniques for the Analysis of Regional Cardiac Function</b> Moderator: Leon Axel, MD, PhD
9:00 am	<i>Tagging &amp; HARP, SENC &amp; DENSE &amp; Velocity Mapping: How to and What to use</i> Frederick Epstein, PhD
9:25 am	<i>Emerging Application of MR based Analysis of Myocardial Function</i> Leon Axel, MD
9:50 am	Oral Abstract Presentation: <i>Polar HARP for the Polar CMR Tagging</i>
10:02 am	Oral Abstract Presentation: <i>Automated Cardiac Motion Estimation from 3D Cine DENSE MRI</i>
10:14 am	Oral Abstract Presentation: <i>Cardiac Deformation Analysis from Orthogonal CSPAMM (OCSPAMM) Tagged MRI</i>

- 10:30 am – 11:00 am Coffee Break
- 11:00 am – 12:30 pm **Session 7 - Novel Techniques for the Assessment of Regional Cardiac Function**  
Moderators: Daniel Ennis, PhD; Frederick Epstein, PhD
- 11:00 am *Cardiac Elastography*  
Arun Kolipaka, PhD
- 11:25 am *Computational Analysis of Tissue Motion in CINE Images*  
Gianni Pedrizetti, PhD
- 11:50 am Oral Abstract Presentation: *A Method to Determine Regional Mechanical Left Ventricular Dyssynchrony Based on High Temporal Resolution Short Axis SSFP Cine Images*
- 12:02 pm Oral Abstract Presentation: *Mitral Valve Annular Velocity Measurements Derived from Cine MRI: Validation Against Doppler Echocardiography*
- 12:14 pm Oral Abstract Presentation: *Quantitative Assessment of Myocardial Motion from Displacement Measurements Derived from Velocity Encoded MRI*
- 12:30 pm – 2:00 pm Lunch – Vendor Presentations and Panel Discussion of Future Directions  
Moderators: Jens Frahm, PhD; Michael Markl, PhD
- 2:00 pm – 3:30 pm **Session 8 - Intra-Cardiac Blood Flow and Coronary Arteries**  
Moderators: Tino Ebbers, PhD; Philip Kilner, MD
- 2:00 pm *3D Blood Flow Through the Heart and Valves*  
JJ Westenberg, PhD
- 2:25 pm *Coronary Blood Flow*  
Freddy Stahlberg, PhD
- 2:50 pm Oral Abstract Presentation: *Diastolic function imaging: A comparison of Real-Time Phase Contrast Magnetic Resonance (CMR) Imaging with Segmented Phase Contrast CMR and Doppler Echocardiography*
- 3:02 pm Oral Abstract Presentation: *Equal stroke volumes different costs: Left ventricular 4D flow in normal and failing hearts*
- 3:14 pm Oral Abstract Presentation: *Flow vortex quantification in the left atrium*
- 3:30 pm – 4:00 pm Coffee Break
- 4:00 pm – 5:30 pm **Session 9 - What's New: Emerging Techniques, Applications and Hot Topics**  
Moderators: Michael Markl, PhD; Freddy Stahlberg, PhD
- 4:00 pm *CCSVI: Abnormal Venous Flow and Neurodegenerative Disease*  
E. Mark Haake, PhD
- 4:25 pm *Real-time Cardiovascular Magnetic Resonance*  
Jens Frahm, PhD
- 4:50 pm Oral Abstract Presentation: *Accelerated Phase Contrast Imaging using Compressed Sensing with Complex Difference Sparsity*
- 5:02 pm Oral Abstract Presentation: *Velocity Unwrap for High Resolution Slice-Selective Fourier Velocity Encoding Using Spiral SENSE*
- 5:14 pm Oral Abstract Presentation: *Technique for Retrospective Respiratory and Cardiac-Gated Phase Contrast Flow Measurements*