



**Friday, September 28, 2018; 12:00 - 1:00 pm**

## Dr. Michael Markl

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## Title: 4D Flow MRI: New Insights in Heart Disease and Stroke

**Fisher Conference  
Room  
2nd Floor  
Robarts Research  
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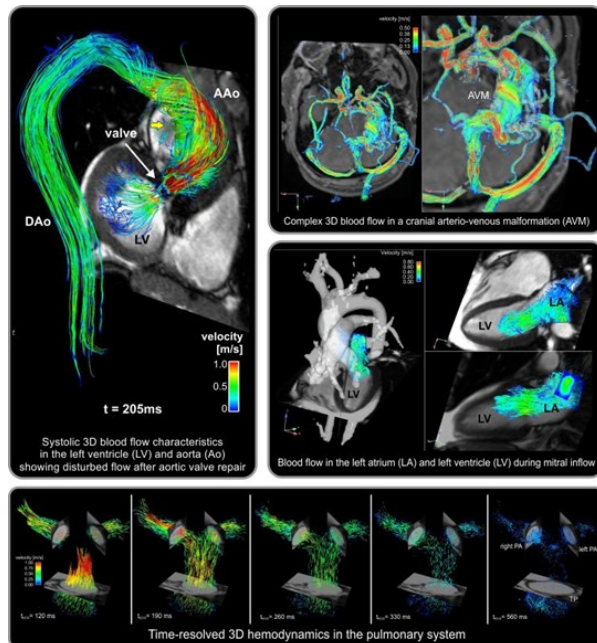


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**Abstract:** The intrinsic motion sensitivity of magnetic resonance imaging (MRI) can be used to acquire and quantify blood flow in-vivo. Advances in imaging techniques allow the use of 4D flow MRI to measure, visualize and quantify 3D blood flow with full volumetric coverage of cardiac chambers or cardio- or neurovascular regions (e.g. thoracic aorta, large cerebral vessels).

The complexity of the 4D flow MRI data (3 spatial dimension, 3 velocity directions, time) allows for the visualization of complex 3D blood flow patterns and the retrospective quantification of blood flow and derived hemodynamic parameters (e.g. wall shear stress, pressure gradients) which has facilitated insight into cardiovascular hemodynamics previously limited by other in-vivo imaging strategies. Specifically, quantitative flow analysis can provide information on the impact of cardio- or neurovascular pathologies on altered hemodynamics associated with disease progression and patient outcome.

This presentation will 1) Introduce methodological aspects and recent developments related to 4D flow MRI; 2) Provide examples of clinically relevant questions and how 4D flow can be used to improve diagnostics and management of heart disease and stroke.



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