# CBM X Program

08:30-08:50 **Opening** - Ten Years of Computational Biomechanics for Medicine Workshop Series
*Karol Miller; The University of Western Australia*

08:50-09:40 **Keynote Lecture I**
Medical Image Computing Meets Biomechanics
*Ron Kikinis; Harvard Medical School and Fraunhofer MEVIS*

## Part I: Biomechanics of Solids

09:40-10:10 Computer Assisted Planning of Periacetabular Osteotomy with Biomechanical Optimization: Constant Thickness Cartilage Models vs. Patient-specific Cartilage Models
*L. Liu, T.M. Ecker, S. Schumann, K.A. Siebenrock, G. Zheng; University of Bern*

10:10-10:40 Role of Ligaments in the Knee Joint Kinematic Behavior: Development and Validation of a Finite Element Model
*F. Germain, P.Y. Rohan, G. Rochcongar, P. Rouch, P. Thoreux, H. Pillet, W. Skalli; Arts et Metiers ParisTech*

**10:40-11:00 Coffee Break**

11:00-11:30 Challenges to Validate Multi-physics Model of Liver Tumor Radiofrequency Ablation from Pre-clinical Data
*Chloe Audigier, Tommaso Mansi, Herve Delingette, Saikiran Rapaka, Tiziano Passerini, Viorel Mihalef, Raoul Pop, Michele Diana, Luc Soler, Ali Kamen, Dorin Comaniciu, Nicholas Ayache; INRIA*

11:30-12:00 Investigation of Modelling Parameters for Finite Element Analysis of MR Elastography
*Lyam Hollis, Lauren EJ Thomas-Seale, Noel Conlisk, Neil Roberts, Pankaj Pankaj and Peter R. Hoskins; University of Edinburgh*

12.00-12:30 Forward Problem of Time-resolved Diffuse Optical Tomography Considering Biological Tissue Deformation
*A.Y. Potlov, T.I. Avsievich, S.V. Frolov, S.G. Proskurin; Tambov State Technical University*

**12:30-13:40 Lunch & Posters**

13:40-14:30 **Keynote Lecture II**
Improving Patient Safety through Real-time Numerical Simulation
*Stephane Cotin; INRIA, France*

## Part II: Vascular System and the Brain

14:30-15:00 Computational Simulation of Blood Flow and Drug Transportation in a Large Vasculature
*Clement Coutey, Maxime Berg, Harvey Ho, Peter Hunter; Auckland Bioengineering Institute*

15:00-15:30 Fundus Image Based Blood Flow Simulation of the Retinal Arteries
*Andreas Kristen, Lachlan Kelsey, Erich Wintermantel, Barry Doyle; UWA*

**15:30-16:00 Coffee Break**

16:00-16:30 Integration of an Electrophysiologically-Driven Heart Model into Three-Dimensional Haemodynamics Simulation using the CRIMSON Control Systems Framework
*Christopher J. Arthurs, C. Alberto Figueroa; King's College London*

16:30-17:00 Simulating Patient Specific Multiple Time-point MRIs from a Biophysical Model of Brain Deformation in Alzheimer's Disease
*Bishesh Khanal, Marco Lorenzi, Nicholas Ayache, Xavier Pennec; INRIA*

17:00-17.30 **Panel Discussion and Best Paper Award** *(led by Karol Miller and Poul Nielsen)*

## Poster Presentations

CBMX-P-1 Mechanical Models of Endothelial Mechanotransmission Based on a Population of Cells

*Yi Chung Lim, Michael T. Cooling, Sue R. McGlashan, David S. Long; University of Auckland*

CBMX-P-2 Robust Landmark Identification for Generating Subject Specific Models for Biomechanics

*Duane T.K. Malcolm, Habib Y. Baluwala, Poul M.F. Nielsen, Martyn P. Nash; Auckland Bioengineering Institute*

CBMX-P-3 Traumatic Brain Injury – an Investigation into Shear Waves Interference Effects

*Grand R. Joldes, Alesio L. Lanzara, Adam Wittek, Barry Doyle, Karol Miller; UWA*

CBMX-P-4 Modelling the Presence of Diffuse Axonal Injury in Primary Phase Blast-Induced Traumatic Brain Injury

*Matthew Sinclair, Adam Wittek, Barry Doyle, Karol Miller, Grand R. Joldes; UWA*

CBMX-P-5 Fuzzy Tissue Classification for Non-linear Patient-Specific Biomechanical Models for Whole-Body Image Registration

*Mao Li, Adam Wittek, Grand Joldes, Karol Miller; UWA*

CBMX-P-6 Modeling of Bifurcated Tubular Structures for Vessel Segmentation

*Haoyin Zhou, Peng Sun, Seongmin Ha, James K. Min, Guanglei Xiong; Dalio Institute of Cardiovascular Imaging NewYork*

CBMX-P-7 GPU-based Fast Finite Element Solution for Nonlinear Anisotropic Material Behavior and Comparison of Integration Strategies

*Vukasin Strbac, David M. Pierce, Jos Vander Sloten, Nele Famaey; KU Leuven/University of Connecticut*

CBMX-P-8 Fast Prediction of Femoral Biomechanics Using Supervised Machine Learning and Statistical Shape Modeling

*Elham Taghizadeh, Michael Kistler, Philippe Büchler, Mauricio Reyes; University of Bern*

CBMX-P-9 Some Use Cases for Composite Finite Elements in Image Based Computing

*Lars Ole Schwen, Torben Patz, Tobias Preusser; Fraunhofer MEVIS*