

# Programme

Monday 9 October 2023

## Training Course

9:30 AM - 10:00 AM	<b>Registration and Refreshments</b>
10:00 AM - 11:00 AM	<b>Session 1</b> ChopMESH: Introduction to ChopMESH, voxel and voxel-dominated mesh generator
11:00 AM - 12:30 PM	<b>Session 2</b> Voxel based solver: taichi-LBM3D, PyEFEM and Wyvern
12:30 PM - 1:30 PM	<b>Lunch</b>
1:30 PM - 2:45 PM	<b>Session 3</b> Voxel based solver: more advanced simulations
2:45 PM - 3:15 PM	<b>Afternoon Break</b>
3:15 PM - 5:00 PM	<b>Session 4</b> Voxel-dominated mesh on OpenFOAM
5:00 PM - 7:00 PM	<b>Drinks Reception</b>

Tuesday 10 October 2023

## Training Course

9:00 AM - 10:30 AM	<b>Session 5</b> Introduction to AMITEX (overview and installation consideration) for the mechanical simulation of heterogeneous materials
10:30 AM - 11:00 AM	<b>Morning Break</b>
11:00 AM - 12:30 PM	<b>Session 6</b> a) Geometry for AMITEX : definition and generation b) First simple simulations
12:30 PM - 1:30 PM	<b>Lunch</b>
1:30 PM - 2:45 PM	<b>Session 7</b> Data inputs (description and examples): a) Material definition b) Loading and output c) Algorithm parameters
2:45 PM - 3:15 PM	<b>Afternoon Break</b>
3:15 PM - 5:00 PM	<b>Session 8</b> User-defined behaviours: umat and MFRONT

Wednesday 11 October 2023

User and Developer Forum

9:30 AM - 10:00 AM	<b>Registration and Refreshments</b>
10:00 AM - 10:15 AM	<b>Welcome</b>
10:15 AM - 11:00 AM	<b>Speaker: Keynote 1</b> <b>Fabrice Pierron:</b> Integrating 2D/3D images with numerical simulations for mechanical deformation analysis
11:00 AM - 12:30 PM	<b>Session 1: Presentations</b> <b>11:00 AM - 11:20 AM Tessa Nogatz:</b> Validation and Verification of Motion Estimation in In Situ Tests <b>11:30 AM - 11:50 AM Chris Packer:</b> Linking Manufacturing to Porosity and Fatigue Performance in Ti-6Al-4V LPBF Produced Parts Using X-Ray CT Techniques <b>11:50 AM - 12:10 PM Alex Cornell-thorne:</b> Investigating the impact of workflow parameters for a semi-automated image-based simulation methodology using benchmark data based on an international tensile testing standard for metallic materials <b>12:10 PM - 12:30 PM Harry Lipscomb and Marti Puig:</b> Characterisation of Surface Roughness for Additive Manufacturing using Deep Learning and X-ray CT
12:30 PM - 1:30 PM	<b>Lunch</b>
1:30 PM - 3:10 PM	<b>Session 2: Presentations</b> <b>1:30 PM - 1:50 PM Elena Syerko:</b> Results of the Meso-Scale Second Stage of the Benchmark Exercise on the Image-Based Permeability Prediction of Composite Reinforcements <b>1:50 PM - 2:10 PM Koussay Daadouch:</b> Computational modeling of fiber-reinforced concrete on the mesoscale: from voxel-based image to finite element mesh <b>2:10 PM - 2:30 PM Moritz Weiss:</b> Data-driven Z-rho decomposition in industrial CT <b>2:30 PM - 2:50 PM Franck Vidal:</b> New developments in gVirtualXray since IBSim 2021 <b>2:50 PM - 3:10 PM Walter Villanueva:</b> Melt infiltration into a Particle Bed
3:10 PM - 3:40 PM	<b>Afternoon Break</b>

3:40 PM - 5:00 PM	<p style="text-align: center;"><b>Session 3: Presentations</b></p> <p><b>3:40 PM - 4:00 PM Rhydian Lewis:</b> VirtualLab: A fully automated, open-source platform for virtual experiments</p> <p><b>4:00 PM - 4:20 PM Benjamin Thorpe:</b> Automating an image-based simulation workflow for component batches with VirtualLab</p> <p><b>4:20 PM - 4:40 PM Umeir Khan:</b> Preform Defect Identification of in-Factory Photographs</p> <p><b>4:40 PM - 5:00 PM Dirk Schut:</b> Joint 2D parallel slice to 3D volume image registration applied to slice photographs and CT scans of apple fruit</p>
5:00 PM - 9:00 PM	<b>Networking Reception and Buffet Dinner</b>

**Thursday 12 October 2023**

**User and Developer Forum**

9:00 AM - 9:30 AM	<b>Refreshments</b>
9:30 AM - 10:15 AM	<p style="text-align: center;"><b>Speaker: Keynote 2</b></p> <p><b>Jean-charles Passieux:</b> Generation of analysis suitable B-Spline beam models from digital images</p>
10:15 AM - 10:55 AM	<p style="text-align: center;"><b>Session 4: Presentations</b></p> <p><b>10:15 AM - 10:35 AM Sylwin Pawlowski:</b> CFD modelling of flow patterns, tortuosity and residence time distribution in monolithic porous columns reconstructed from X-ray tomography data</p> <p><b>10:35 AM - 10:55 AM Liang Yang:</b> Hex dominated mesh generator for Image Based Simulation</p>
10:55 AM - 11:25 AM	<b>Morning Break</b>
11:25 AM - 12:25 PM	<p style="text-align: center;"><b>Session 5: Presentations</b></p> <p><b>11:25 AM - 11:45 AM Christian Breite:</b> Enhancing ultrafast in-situ synchrotron radiation computed tomography of composite failure by super-resolution</p> <p><b>11:45 AM - 12:05 PM Ander Biguri:</b> Iterative reconstruction for large scale tomographic problems using TIGRE: discussion on image quality, scanning time and algorithms</p> <p><b>12:05 PM - 12:25 PM Léonard Turpin:</b> Identification of a mechanically based interface from an in-situ experiment</p>
12:25 PM - 1:25 PM	<b>Lunch</b>

1:25 PM - 2:45 PM	<p align="center"><b>Session 6: Presentations</b></p> <p><b>1:25 PM - 1:45 PM Connie Qian:</b> 3D Fibre Architecture Characterisation for Advanced Carbon Fibre Composites through Robust CT Scanning Technology</p> <p><b>1:45 PM - 2:05 PM Dongze He:</b> Analysis of the performance of braided composite tubes through X-ray computed tomography image-based modelling enabled finite element analysis</p> <p><b>2:05 PM - 2:25 PM Iwan Mitchell:</b> Creating Functional Digital Shadows of X-ray systems</p> <p><b>2:25 PM - 2:45 PM Miroslav Yosifov:</b> Generating Physics-Informed and Accurate Training Data through XCT Simulations for Deep Learning Applications</p>
2:45 PM - 3:15 PM	<b>Afternoon Break</b>
3:15 PM - 4:15 PM	<p align="center"><b>Session 7: Presentations</b></p> <p><b>3:15 PM - 3:35 PM Fatih Uzun:</b> Voxel-based full-field eigenstrain reconstruction of residual stresses</p> <p><b>3:35 PM - 3:55 PM Grammatiki Lioliou:</b> Two-directional phase sensitivity and isotropic spatial resolution in phase contrast CT: prospects for industrial applications</p> <p><b>3:55 PM - 4:15 PM Fatima Zahra Oujebbour:</b> 3D U-Net for automatic segmentation of volumes from Multi-energy X-ray Computed Tomography</p>
4:15 PM - 4:30 PM	<b>Wrap-up and Close</b>

**Friday 13 October 2023**

**Collaborative workshop**

9:00 AM - 9:30 AM	<b>Registration and Refreshments</b>
9:30 AM - 10:45 AM	<b>Session 1</b> Personal Introductions
10:45 AM - 11:15 AM	<b>Morning Break</b>
11:15 AM - 12:30 PM	<b>Session 2</b> Theme Introductions and Identifying Research Challenges
12:30 PM - 1:30 PM	<b>Lunch</b>
1:30 PM - 2:45 PM	<b>Session 3</b> Research Prioritisation
2:45 PM - 3:15 PM	<b>Afternoon Break</b>
3:15 PM - 4:30 PM	<b>Session 4</b> Cementing Actions
4:30 PM - 4:35 PM	<b>Close</b>