

# IMAGING 2023

Villa Monastero, Varenna

September 26-29, 2023

INVITED SPEAKERS

ORALS

INDUSTRIAL CONTRIBUTIONS

## DAY 1 - TUE 26 SEPT

Start	End		
09:00	10:00	Registration and Coffee	
10:00	10:30	Welcome	Alberto BRAVIN, Daniela DI MARTINO

### MORNING

### Title

#### Data processing and Artificial intelligence

		Chair:	Alberto BRAVIN, Daniela DI MARTINO	
10:30	11:00		Xavier PROCHASKA University of California Santa Cruz	From the Stars to the Sea: Accelerating Discoveries in Science with Artificial Intelligence
11:05	11:35		Francesca PALERMO CNR-Nanotec Roma	Identification of early imaging markers to predict dementia: the role of the gut
11:40	12:10		Gianfelice CINQUE Diamond Light Source	Synchrotron InfraRed for Molecular Imaging e.g. Cultural Heritage/Archaeology and BioMedicine at Diamond
12:10	12:30	Group Photo		
12:30	14:30	Lunch		

### AFTERNOON

#### Combined methodologies (Hybrid technology) and New imaging applications

		Chairs:	Marco PAGANONI / Marine COTTE	
14:30	15:00		Paul LECOQ CERN	Time-of-Flight PET scanner: From Hope to Practice
15:05	15:25		Fiammetta PAGANO University of Milano-Bicocca and CERN	Heterostructured Scintillators: A Novel Approach to Achieving High Sensitivity and Fast Timing in TOF-PET
15:30	16:15	Coffee		
16:15	16:35		Carlo PEIFFER University College London	X-ray phase contrast strain imaging using edge illumination
16:40	17:00		Nicola MOSCO INFN - Torino	4D GRAPH-X: Grating-based phase contrast X-ray imaging
17:05	17:25		Sergei GASILOV Canadian Light Source	Tofu ez and tofu flow: interactive user-friendly tools for optimization of reconstruction parameters and batch processing of microCT data
17:30	17:50		Margaux BOUZIN University of Milano-Bicocca	Model-based image reconstruction for super-resolution photo-thermal imaging
17:55	18:10		Cristina MATTONE CAEN S.p.A.	Tools for Discovery meet Educational Labs!
18:10		Free Time		
19:30		Welcome Party		

**DAY 2 - WED 27 SEPT****MORNING****Imaging for cultural heritage, homeland security and engineering**

		<i>Chairs:</i>	<i>Anders KÆSTNER / Giovanni ROMANELLI</i>	
09:00	09:30		Marine COTTE ESRF	Making advanced synchrotron radiation microscopes accessible and easy to use for heritage science
09:35	10:05		Alessandro TENGATTINI Institut Laue-Langevin	Simultaneous neutron and X-ray tomography at NeXT-Grenoble to explore coupled processes in porous media
10:10	10:30		Eberhardt LEHMANN Paul Scherrer Institut	How to present neutron imaging data from studies of cultural heritage objects best – the example of ancient Tibetan bronze sculptures
10:30	11:00	<i>Coffee</i>		
11:00	11:30		Antonella SCHERILLO ISIS Neutron and Muon Soucre, STFC	Neutron imaging application in Cultural heritage at ISIS – successful stories and new developments
11:35	11:55		Francesca TANSELLA University of Torino	Computed Tomography of ancient wood wind instruments and the possibility of rediscovering their sound.
12:00	12:20		Giulia MARCUCCI University of Milano-Bicocca	Micro-XRF and PIXE/PIGE Imaging of ancient Roman “glass-gems”: insights
12:25	12:45		Matteo BUSI Paul Scherrer Institut	Advanced neutron imaging techniques at the Paul Scherrer Institute
12:45	14:30	<i>Lunch</i>		

**AFTERNOON**

		<i>Chairs:</i>	<i>Eberhardt LEHMANN / Raffaele AGOSTINO</i>	
14:30	15:00		Giovanni ROMANELLI University of Rome Tor Vergata	Incoherent inelastic neutron imaging applied to the catalytic conversion of molecular hydrogen
15:05	15:25		Davide MEREGALLI GILARDONI S.p.A.	X-Ray Image processing and Artificial Intelligence Algorithms applied to Homeland Security
15:30	16:00		Nikolay KARDJLOV Helmholtz-Zentrum-Berlin (HZB)	Recent Advancements in Neutron Imaging
16:05	16:25		Anders KÆSTNER Paul Scherrer Institut	Quantitative analysis in neutron imaging
16:30	17:45		<b>Poster session-1 &amp; Coffee (coffee till 17:00)</b>	
17:45	18:00		Luigi CIMMINO CAEN S.p.A.	Radiographic Imaging with muons for underground and safeguard applications
18:05	18:25		Elena LONGO Elettra - Sincrotrone Trieste S.C.p.A.	The SYRMEP X-ray imaging beamline of Elettra: recent advances for biomedical, environmental and cultural heritage studies
18:30	19:00		Diego DREOSSI Elettra - Sincrotrone Trieste S.C.p.A.	SYRMEP-LS: the new hard X-ray imaging beamline at Elettra 2.0
19:00		<i>Free Time</i>		

## DAY 3 - THUR 28 SEPT

### MORNING

#### Biomedical imaging for diagnosis and therapy: techniques and achievements

		<i>Chairs:</i>	<i>Gianfelice CINQUE / Alberto DEL GUERRA</i>	
09:00	09:30		Alberto DEL GUERRA University of Pisa	The Birth, The Growth and The Future of Physics in Medical Imaging
09:35	10:05		Silvia CIPICCIA University College London	Brain imaging: a great challenge from macro to nano
10:10	10:40		Viktor NIKITIN Argonne National Laboratory	Real-time X-ray tomographic imaging at the Advanced Photon Source
10:40	11:10	<i>Coffee</i>		
11:10	11:30		Sam BAYAT University of Grenoble Alpes	4D Synchrotron X-ray $\mu$ CT Imaging of Lung Tissue Strain in Bleomycin-Induced Lung Injury in Rats
11:35	11:55		Sandro DONATO University of Calabria	Phase-contrast micro tomography for 3D virtual histology of paraffin-embedded human tissues
12:00	12:30		Julia HERZEN Technical University of Munich	Quantitative X-ray imaging – towards material-specific numbers from images
12:30	14:30	<i>Lunch</i>		

### AFTERNOON

		<i>Chairs:</i>	<i>Giuseppe GORINI / Sam BAYAT</i>	
14:30	15:00		Raffaele AGOSTINO University of Calabria	Introducing $\mu$ Tomo2 and SoftX: STAR's beamlines for high-energy X-ray imaging
15:05	15:35		Marie JACQUET IJCLab/University of Paris-Saclay	The characteristics of the inverse Compton scattering source ThomX and the imaging plans
15:35	15:45	<i>Group Photo</i>		
15:45	16:15	<i>Coffee</i>		
16:20	16:40		Grammatiki LIOLIOU University College London	Flyscan compatible scanning schemes for x-ray $\mu$ -CT with a structured beam
16:45	17:05		Ian BUCHANAN University College London	Direct measurement of scattering signals with Edge Illumination and the difference from interferometric measurements of the same quantity
17:10	17:30		Morgane SOWINSKI CNRS/MNHN	Seeing inside the frog's body: from the larynx to the ear
17:30	19:10		<b>Poster session-2 &amp; refreshment (refreshment at the bar till 18:45)</b>	
19:55		<i>Departure for Social Dinner</i>		
20:15		<i>Social Dinner</i>		

**DAY 4 - FRI 29 SEPT****MORNING****Microtomography: present and future**

		<i>Chairs:</i>	<i>Andrea ALIVERTI / Diego DREOSSI</i>	
09:00	09:30		Mohsen SAMADI KHOSHKHOO CARL ZEISS S.p.A.	Extending Synchrotron X-ray Microscopy to the Laboratory – X-Ray Microscopy as a correlative imaging technique
09:35	09:55		Clara MAGNIN University of Grenoble Alpes	X-ray Phase Contrast and Dark-field imaging on laboratory equipment using random modulation
10:00	10:20		Joshua GOBÉ Lyon Neuroscience Research Center	High-resolution brain tractography from X-ray phase-contrast images
10:25	10:55	<i>Coffee</i>		
10:55	11:15		Paola COAN Ludwig Maximilian University	Synchrotron X-rays to elucidate anatomy, pathology and therapy
11:20	11:40		Andrea ALIVERTI Polytechnic of Milano	Micro-CT-derived ventilation biomarkers for precision preclinical response to therapy in a quantitative functional assessment of pathology and mouse model of lung fibrosis
11:45	12:05		Anna CAROLI Mario Negri IRCCS	Imaging in kidney disease
12:10	12:30		Eugenio VOCATURO CNR-Nanotec	Multiple instance Learning approaches for E-health and advanced diagnostics
12:30	12:40		<b>Conclusions</b>	
12:40	12:50		<b>Prize ceremony</b>	

## POSTER LIST

### POSTER SESSION-1

September 27 16.30 - 17:45

P1.1	<del>Matteo BUSI</del> Paul Scherrer Institut	<del>Advanced neutron imaging techniques at the Paul Scherrer Institute</del>
P1.2	Margherita SIMONI University of Roma Tor Vergata	Neutron imaging for the catalysed hydrogen conversion in metal organic frameworks
P1.3	Federico CARUGGI University of Milano-Bicocca	Development of a Triple-GEM detector with strip readout and GEMINI chip for X rays and neutron imaging
P1.4	Agostino CELORA University of Milano-Bicocca	A multipurpose software for imaging studies and tomographic inversion applied to X-ray detection
P1.5	Maria Caterina CROCCO University of Calabria and STAR IR	A non-destructive numismatic and archaeometric study of Roman coins
P1.6	Alessandro RE University of Torino	Development of a setup for imaging, elemental and structural non-invasive characterization of materials based on a liquid anode X-ray source
P1.7	Martina FRANCHI University of Roma La Sapienza	Assessing readability of the text in ancient paper fragments by a photometric statistical analysis
P1.8	Giulia MARCUCCI University of Milano-Bicocca	A neutron imaging investigation on Roman brass samples coming from ancient Mediolanum town
P1.9	Maya MUSA University of Pavia	Unravelling the morphology of bulk meteorite samples by neutron imaging and diffraction

**POSTER SESSION-2****September 28 18:00 - 19:30**

P2.1	Sergey GASILOV Canadian Light Source	Biomedical imaging and microtomography at Canadian Light Source
P2.2	Simone CAPUTO University of Calabria	Semantic segmentation of X-ray phase-contrast microtomographic images of adult insect specimens using a convolutional neural network
P2.3	Carlo PEIFFER University College London	Quantitative comparison between beam tracking with analyser based imaging for measuring ultra small angle X-ray scattering using synchrotron radiation
P2.4	<del>Clara MAGNIN</del> <del>University of Grenoble Alpes</del>	<del>X-ray Phase Contrast and Dark-field imaging on laboratory equipment using random modulation</del>
P2.5	Vincenzo FORMOSO University of Calabria and STAR IR	Monitoring the effects of combined calcimimetics and tolvaptan treatment on renal cysts growth in animal models of human Polycystic Kidney Disease by 3D enhanced X-ray microtomography
P2.6	Paola PERION University of Trieste and INFN Trieste	Spectral micro-CT for simultaneous gold and iodine detection, and multi-material identification
P2.7	Ju Young LEE University of Calabria	Virtual Histology of Human Brain tissue using Phase-Contrast X-ray Microtomography
P2.8	Sandro DONATO University of Calabria	Comparison of novel reconstruction algorithms for low-dose breast computed tomography with synchrotron radiation
P2.9	Angelo TAIBI University of Ferrara	Spectral micro-CT of osteochondral samples with iodine cationic contrast agent
P2.10	Fabien CHAUVEAU Lyon Neuroscience Research Center	Virtual histology of human cerebral amyloid angiopathy
P2.11	Hafiz Muhammad FAHAD Ludwig Maximilian University	DAPHNE4NFDI: Data from PHoton and Neutron Experiments - the synchrotron imaging use case
P2.12	Davide BUSEGHIN Polytecnic of Milano	A fully automated deep learning algorithm to derive micro-CT imaging biomarkers describing lung fibrosis progression and response to therapy in mice
P2.13	Alberto ARRIGONI Mario Negri IRCCS	Brain connectivity and microstructure in COVID-19 patients with olfactory or cognitive disorder