

08:50 → 09:10 **Welcome Session**09:10 → 10:30 **PET/MR applications**

Conveners: Joseba Alonso (Institute for Instrumentation in Molecular Imaging, i3M-CSIC), Nicola Belcari (Department of Physics "E.Fermi", University of Pisa, Pisa, Italy)

09:10 **Clinical PET/MR of the brain: visions from the past and for the future** ⌚ 40m
Speaker: Ian Law (Univ. of Copenhagen, Dept. of Clinical Medicine)

09:50 **Integrated PET/MR Scanner as Reference Imaging Tool in the Study of Dementia: Results from the PM-D project** ⌚ 20m
Speaker: Marco Aiello (IRCCS SYNLAB SDN, Naples, IT)

10:10 **Validation of MotionFree Brain algorithm in an 11C-Methionine PET/MRI study of pediatric patients with brain tumors** ⌚ 20m
Speaker: Paola Vittoria Scifo (IRCCS San Raffaele Scientific Institute)

10:30 → 11:00

Coffee break

11:00 → 12:40 **MR methods**

Conveners: Dennis Klomp (University Medical Center Utrecht), Michela Tosetti (IRCCS Stella Maris)

11:00 **The promise of a new generation of affordable hybrid technologies exploiting low-field MRI** ⌚ 40m
Speaker: Joseba Alonso (Institute for Instrumentation in Molecular Imaging, i3M-CSIC)

11:40 **Estimation of T2* values in hyperpolarized 13C MRI of healthy and ischemic kidneys in a porcine model.** ⌚ 20m
Speaker: Malene Aastrup (The MR Research Centre, Aarhus University, Denmark)

12:00 **Elucidating the effect of respiratory motion on in vivo 31P magnetic resonance spectroscopic imaging in the human liver at 7 Tesla** ⌚ 20m
Speaker: Woutjan Branderhorst (University Medical Center Utrecht)

12:20 **Musculoskeletal MR Fingerprinting at 7T using spectral-spatial RF pulses** ⌚ 20m
Speakers: Matteo Cencini (Istituto Nazionale di Fisica Nucleare), Michela Tosetti (IRCCS Stella Maris)

12:40 → 13:10 **Industrial Session**

12:40 **QuantaBrain** ⌚ 15m

12:55 **GE HealthCare** ⌚ 15m

13:10 → 15:30

Lunch

15:30 → 17:10

AI enhanced PET imaging**Conveners:** Marco Aiello (IRCCS SYNLAB SDN, Naples), Pietro Carra (Istituto Nazionale di Fisica Nucleare)

15:30

Metabolite-Corrected Plasma Input Function Estimation in Dynamic PET Imaging Using Physically Informed Deep Neural Networks

🕒 20m

Speaker: Marianna Inglese (Department of Biomedicine and Prevention, University of Rome Tor Vergata)

15:50

Dopaminergic PET to SPECT Domain Adaptation: A Cycle GAN translation approach

🕒 20m

Speaker: Leonor Lopes (Department of Nuclear Medicine, Inselspital, University of Bern, Bern, Switzerland | Graduate School for Cellular and Biomedical Sciences, University of Bern, Bern, Switzerland)

16:10

Deep Learning Image Denoising for a cost-effective WT-PET design with sparse detector coverage

🕒 20m

Speaker: Maya Abi Akl (Ghent University)

16:30

PETAL-3D: Progressive Elimination of Noise Towards Accurate Ultra Low-Dose PET Images Using 3D U-Net

🕒 20m

Speaker: Ezzat Elmoujarkach (Institute of Medical Engineering, Universität zu Lübeck, Lübeck, Germany)

16:50

Sinogram Denoising Using Transformer-based Learned Sinusoidal Patterns

🕒 20m

Speaker: Hamidreza Rashidy Kanan (KTH University)

17:10 → 17:40

Coffee break

17:40 → 19:20

Poster Session**Convener:** Otto Muzik (Wayne State University)

15:30 → 17:10

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Poster Session**Convener:** Otto Muzik (Wayne State University)

08:30 → 10:30

Fast timing sensors and electronics

Conveners: Francis Loignon-Houle (Institute for Instrumentation in Molecular Imaging (i3M CSIC-UPV)), Paul Lecoq

08:30

Time of flight: the last frontier in PET

Speaker: Georgios Konstantinou (EPFL)

🕒 40m

09:10

NUV-sensitive Deep-junction (NUV-DJ) SiPMs, a new technology optimized for fast timing applications

Speaker: Oscar Ariel Marti Villarreal (Fondazione Bruno Kessler (FBK))

🕒 20m

09:30

The new PETsys TOFPET3 ASIC

Speaker: Joao Varela (PETsys Electronics)

🕒 20m

09:50

Second Generation Readout Electronics Design for a PET Detector That Achieves ~100 ps CTR and <2 mm DOI Resolution

Speaker: Zhixiang Zhao (Stanford University)

🕒 20m

10:10

Fast Detectors Viewed from a Different Angle: Scintillators and SiPMs for Photon-Counting CT

Speaker: Dennis Schaart (Delft University of Technology)

🕒 20m

10:30 → 11:00

Coffee break

11:00 → 12:40

Scintillators for fast timing

Conveners: Georgios Konstantinou (EPFL), William Moses

11:00

Harnessing the Purcell Effect for Faster Metascintillators

Speaker: Paul Lecoq (Universitat Politècnica de València, Metacrystal, CERN)

🕒 20m

11:20

Comparative Experimental and Simulation DOI Analysis on Semi-Monolithic Metascintillators

Speaker: Riccardo Latella (Universidad Politécnica de Valencia)

🕒 20m

11:40

TlCl:Be,I: a high sensitivity scintillation and Cherenkov emitter for TOF-PET

Speaker: Nicolaus Kratochwil (UC Davis, Department of Biomedical Engineering)

🕒 20m

12:00

High loading nanocomposites of cesium lead halide nanocrystals for fast timing

Speaker: Jan Král (Czech Technical University in Prague, Institute of Physics CAS)

🕒 20m

12:20

Comparative Analysis of Novel Time-Walk Correction Methods for Metascintillators

Speaker: Riccardo Latella (Universidad Politécnica de Valencia)

🕒 20m

12:40 → 13:10

Industrial Session

12:40

MILabs

🕒 15m

12:55

PETsys Electronics

🕒 15m

13:10 → 15:30

Lunch

15:30 → 17:10

AI enhanced PET detectors

Conveners: Dennis Schaart (Delft University of Technology), Giancarlo Sportelli (University of Pisa and Istituto Nazionale di Fisica Nucleare)

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|-------|--|-------|
| 15:30 | Refining Position Estimates of PET Detector Blocks with Stochastic Gradient Descent
Speaker: Julian Thull (Department of Physics of Molecular Imaging Systems, Institute for Experimental Molecular Imaging, RWTH Aachen University) | 🕒 20m |
| 15:50 | On-Chip Analog Neural Networks for In-Sensor Image Reconstruction Towards PET Scanners with Large Fields of View
Speaker: Susanna Di Giacomo (Dipartimento di Elettronica, Informazione e Bioingegneria, Politecnico di Milano and INFN Milano) | 🕒 20m |
| 16:10 | Characterisation of an AI-enhanced TOF-PET detector module with monolithic BGO crystals
Speaker: Pietro Carra (Università di Pisa, Dipartimento di Fisica E. Fermi) | 🕒 20m |
| 16:30 | Improving Timing Resolution of BGO with and without Deep Learning
Speaker: Francis Loignon-Houle (Institute for Instrumentation in Molecular Imaging (i3M), CSIC - UPV) | 🕒 20m |
| 16:50 | 3D In-System Calibration of PET Detectors
Speaker: Yannick Kuhl (Department of Physics of Molecular Imaging Systems, Institute for Experimental Molecular Imaging, RWTH Aachen University, Aachen, Germany) | 🕒 20m |

17:10 → 17:40

Coffee break

17:40 → 19:20

PET/MR reconstruction

Conveners: Ian Law (Department of Clinical Physiology and Nuclear Medicine), Laura Biagi (IRCCS Stella Maris)

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|-------|---|-------|
| 17:40 | Multi-Spatial Resolution MRI Guided PET Image Reconstruction with Adaptive Prior Strength
Speaker: Jorge Cabello (Siemens Medical Solutions) | 🕒 20m |
| 18:00 | Anatomically Guided PET Reconstruction using MR Information for Low Dose Imaging
Speaker: Matthew Spangler-Bickell (GE HealthCare, Waukesha, WI, USA) | 🕒 20m |
| 18:20 | Hybrid Reconstruction of PET data for Spinal Cord Imaging in PET/MRI.
Speaker: Eve Lennie | 🕒 20m |
| 18:40 | Structurally Guided PET Image Reconstruction for Improved Localisation of Pituitary Adenomas
Speaker: Pawel Markiewicz (London South Bank University and University College London) | 🕒 20m |
| 19:00 | Improving Small Renal Mass Delineation and Quantification in PET by Contrast-Enhanced MR-Guided Reconstruction: A Pilot Study Using Hybrid PET/MR Data
Speaker: Jaewon Yang (University of Texas Southwestern) | 🕒 20m |

08:30 → 10:30 **Technologies for total body PET imaging**

Conveners: Pawel Moskal, Taiga Yamaya (National Institutes for Quantum Science and Technology (QST))

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|--------------|---|-------|
| 08:30 | Clinical Potential of Total-body PET
Speaker: Axel Rominger (Department of Nuclear Medicine, Inselspital, University Hospital Bern, Bern, Switzerland) | 🕒 40m |
| 09:10 | IMAS: a total body PET with TOF and DOI capabilities
Speaker: Antonio Gonzalez (Institute for Instrumentation in Molecular Imaging, i3M-CSIC) | 🕒 20m |
| 09:30 | Development of Total Body J-PET from plastic scintillators
Speaker: Keyvan Tayefi Ardebili (Jagiellonian university) | 🕒 20m |
| 09:50 | Investigating the Influence of TOF and DOI on Spatial Resolution in Flat-Panel and Cylindrical Total-Body PET
Speaker: Boris Vervenne (MEDISIP, Department of Electronics and Information Systems, Ghent University) | 🕒 20m |
| 10:10 | Utility of total-body PET in monitoring carbon ion therapy: Demonstration in rat
Speaker: Chie Toramatsu (National Institutes for Quantum Science and Technology (QST)) | 🕒 20m |

10:30 → 11:00

Coffee break

11:00 → 12:40 **Specialized fast detectors**

Conveners: Pedro Almeida (Faculdade de Ciências da Universidade de Lisboa - Instituto de Biofísica e Engenharia Biomédica), Sun Il Kwon (University of California Davis)

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|--------------|---|-------|
| 11:00 | Fast Timing Detectors for Prompt Gamma Time Imaging
Speaker: Sara Marcatili (LPSC-IN2P3) | 🕒 20m |
| 11:20 | Demonstration of LGADs and Cherenkov gamma detectors for prompt gamma timing range verification of proton therapy
Speaker: Ryan Heller (Lawrence Berkeley National Laboratory) | 🕒 20m |
| 11:40 | First Radionuclide Imaging Tests with MACACOIII+ Compton camera
Speaker: Gabriela Llosa (Instituto de Física Corpuscular (IFIC/CSIC-UVEG)) | 🕒 20m |
| 12:00 | Time-of-Flight Requirements to Mitigate Blurring Induced by Annihilation Photon Acollinearity
Speaker: Maxime Toussaint (Université de Sherbrooke) | 🕒 20m |
| 12:20 | Dual-panel geometry for PET-guided therapy to be enabled by super-fast detector: simulation study
Speaker: Taiga Yamaya (National Institutes for Quantum Science and Technology (QST)) | 🕒 20m |

12:40 → 13:10 **Industrial Session**

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|--------------|---------------|-------|
| 12:40 | Bruker | 🕒 15m |
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13:10 → 15:30

Lunch

15:30 → 17:10 **Poster Session**
Convener: Sara Marcatili (CNRS LPSC)

17:10 → 17:40 **Coffee break**

17:40 → 18:55 **Special Track on Image reconstruction**
Conveners: Johan Nuyts (KU Leuven, Belgium), Kris Thielemans (University College London)

17:40 **Fast and memory-efficient reconstruction of sparse Poisson data in listmode with non-smooth priors with application to time-of-flight PET** ⌚ 15m
Speaker: Georg Schramm (KU Leuven)

17:55 **Stochastic Optimisation Framework using the Core Imaging Library and Synergistic Image Reconstruction Framework for PET Reconstruction** ⌚ 15m
Speakers: Evangelos Papoutsellis (Science and Technology Facilities Council), Margaret Duff (Science and Technology Facilities Council – Rutherford Appleton Laboratories)

18:10 **Comparison of Synergistic and Single Modality Anatomically-Informed Structural Priors for Yttrium-90 PET and SPECT Reconstruction** ⌚ 15m
Speaker: Sam Porter (National Physical Laboratory & Institute of Nuclear Medicine, UCL)

18:25 **Primal-Dual Hybrid Gradient Algorithm for emission tomography: A Comparative Study of Convergence under Poisson Likelihood with ML-EM** ⌚ 15m
Speaker: Luca Presotto (University of Milano Bicocca)

20:00 → 22:00 **Social dinner**

08:30 → 10:30

High-performance preclinical and organ-specific systems

Conveners: Gabriela Llosa (Instituto de Física Corpuscular (IFIC/CSIC-UVEG)), Nuno Matela (Faculdade de Ciências da Universidade de Lisboa - Instituto de Biofísica e Engenharia Biomédica)

08:30

ISOLPHARM project: Development of two preclinical imaging devices for Ag-111 β and γ radiation

Speaker: Alberto Andrichetto (Istituto Nazionale di Fisica Nucleare)

🕒 20m

08:50

Characterize the Effective Half Life for Instant Single Time Point Dosimetry using Machine Learning

Speaker: Carlos Vinícius Gomes Ferreira (Inselspital)

🕒 20m

09:10

SAFIR-II: Design and performance of a high-rate preclinical PET-MR System

Speaker: Jan Debus (ETH Zürich)

🕒 20m

09:30

Reaching new horizons in pre-clinical imaging: trimodal PET-FUS-MR technology

Speaker: Andrea Gonzalez-Montoro (Institute for Instrumentation in Molecular Imaging, i3M-CSIC)

🕒 20m

09:50

The HYPMED Breast PET/MRI Insert: MRI Compatibility and Comparison to Whole Body PET/MRI

Speaker: Bjoern Weissler (RWTH Aachen, Hyperion HIS)

🕒 20m

10:10

PET Imaging of the Human Brain at 2 μ L Resolution with a Next-Generation Ultra-High-Resolution (UHR) Scanner

Speaker: Francis Loignon-Houle (Université de Sherbrooke; Institute for Instrumentation in Molecular Imaging (i3M CSIC-UPV))

🕒 20m

10:30 → 11:00

Coffee break

11:00 → 12:40

Total body PET imaging

Conveners: Alberto Del Guerra (Istituto Nazionale di Fisica Nucleare), Stefaan Vandenberghe (MEDISIP-IBBT-Ugent)

11:00

Different Deep Learning Training Strategies for Attenuation and Scatter Correction in PET

Speaker: Florence Muller (Ghent University & University of Pennsylvania)

🕒 20m

11:20

Multi-Organ Segmentation on CT-free Total-Body Dynamic PET Scans

Speaker: Christoph Clement

🕒 20m

11:40

Recovery coefficient corrected image derived input function from a long axial field of view PET/CT-scanner

Speaker: Thomas Lund Andersen

🕒 20m

12:00

Motion analysis of Subjects standing in walk-through total body PET using infrared based localization

Speaker: Rabia Aziz (Ghent University)

🕒 20m

12:20

Estimation of the sensitivity for quantum entanglement imaging with total-body J-PET

Speaker: Pawel Moskal

🕒 20m

12:40 → 15:30

Lunch

15:30 → 17:30

PET technologies**Conveners:** Antonio Gonzalez (Institute for Instrumentation in Molecular Imaging, i3M-CSIC), Matteo Morrocchi (Istituto Nazionale di Fisica Nucleare)

15:30

Investigation on Timing Performance of Cherenkov TOF PET Detector with Bismuth Germanate Scintillators and Segmented SiPMs**Speaker:** Minseok Yi

🕒 20m

15:50

Cryogenic CsI as a potential PET material**Speaker:** Stefano Roberto Soleti (Donostia International Physics Center)

🕒 20m

16:10

How to improve timing performance in TOF-PET with segmented SiPMs coupled to BGO and LYSO**Speaker:** Katrin Herweg (Department of Physics of Molecular Imaging Systems, Institute of Experimental Molecular Imaging, RWTH-Aachen University)

🕒 20m

16:30

Wedge-Based Side Readout for Minimizing Uncertainty in the Optical Path of Cherenkov Photons**Speaker:** Minseok Yi

🕒 20m

16:50

Low-Dose Total-Body Time-of-Flight PET Using High-Resolution Gamma Ray Multiplier Tubes (HGMTs)**Speaker:** Cameron Poe (University of Chicago)

🕒 20m

17:10

Amorphous Silicon Microchannel Plates: A new photon detector with 10 ps timing and 15 μm spatial resolution**Speaker:** Georgios Konstantinou (EPFL)

🕒 20m

17:30 → 17:50

Final remarks

18:30 → 19:30

Farewell cocktail