# 7th Conference on PET/MR and SPECT/MR

**Sunday 20 May 2018 - Wednesday 23 May 2018**

**La Biodola, Isola d'Elba**

# Programme

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# Sunday 20 May 2018

## Registration - Room Elba (08:45-09:30)

## Training school on PET/MR reconstruction - Room Bonaparte (09:30-12:00)

| time | title | presenter |
|------|-------|-----------|
| 09:30 | Basics of MR physics and image reconstruction | |
| 10:30 | Hands-on session with SIRF for MR image reconstruction | |

## Lunch break - Fuoco di bosco restaurant (12:00-15:00)

## Training school on PET/MR reconstruction - Room Bonaparte (15:00-16:00)

| time | title | presenter |
|------|-------|-----------|
| 15:00 | Basics of PET physics and image reconstruction | |

## coffee break - Terrace (16:00-16:30)

## Training school on PET/MR reconstruction - Room Bonaparte (16:30-19:00)

| time | title | presenter |
|------|-------|-----------|
| 16:30 | Hands-on session with SIRF for PET image reconstruction | |
| 18:00 | Synergistic reconstruction for PET-MR | |

## PSMR welcome cocktail - Hotel Hermitage by the pool (19:30-20:30)

# Monday 21 May 2018

## Opening Session - Room Bonaparte (08:30-09:30)

 - **Conveners: Dr. Neuner, Irene**

| time | title | presenter |
|------|-------|-----------|
| 08:30 | Welcome | |
| 08:50 | PET/MRI and brain connectivity | AIELLO, Marco |

## Session 1 - Brain and organ specific systems - Room Bonaparte (09:30-10:30)

 - **Conveners: Prof. Yamaya, Taiga**

| time | title | presenter |
|------|-------|-----------|
| 09:30 | Evaluation of the MINDView PET insert in a 3T MRI | GONZALEZ, Antonio |
| 09:50 | Design and detector performance of the PET component of the TRIMAGE PET/MR/EEG system | SPORTELLI, Giancarlo |
| 10:10 | Next-generation breast cancer PET-MR imaging with HYPMED: System and workflow design | SCHAART, Dennis |

## coffee break - Parking area (10:30-11:00)

## Session 2 - Software and Quantification: attenuation correction – part 1 - Room Bonaparte (11:00-12:40)

 - **Conveners: Prof. Visvikis, Dimitris**

| time | title | presenter |
|------|-------|-----------|
| 11:00 | Attenuation estimation using non-TOF PET scattered photon energy information and an anatomical MRI prior | BRUSAFERRI, Ludovica |
| 11:20 | Repeatability of Deep Learning density maps of the head | DELSO, Gaspar |
| 11:40 | Simultaneous emission/transmission measurements for accurate attenuation correction in PET/MRI | RENNER, Andreas |
| 12:00 | An Aristotelian view on MR-based attenuation correction (ARISTOMRAC): combining the four elements | CENCINI, Matteo |
| 12:20 | A lesion insertion tool for attenuation correction evaluation in simultaneous PET/MR | LAFOREST, Richard |

## Lunch break - Fuoco di bosco (12:40-15:30)

## Session 3 - Instrumentation: systems and detectors - Room Bonaparte (15:30-17:30)

 - **Conveners: Prof. Ziegler, Sibylle**

| time | title | presenter |
|------|-------|-----------|
| 15:30 | Initial results of a prototype brain PET system using a time-based digitizer and an FPGA-based real-time coincidence processor | SON, Jeong-Whan |
| 15:50 | Current status of the PET detector developments of a dedicated PET/MRI for the diagnosis of breast cancer | SCHUG, David |
| 16:10 | The design of a wide-bore 1.5T MR body coil with integrated PET detectors | BEIJST, Casper |

| 16:30 | Performance characterization of MPPC modules for ToF-PET applications | GOERTZEN, Andrew |
|---|---|---|
| 16:50 | Timing resolution of linearly-graded silicon photomultipliers coupled to thin monolithic crystals | BERNEKING, Arne |
| 17:10 | RGB-HD SiPMs for fast readout of GAGG scintillation crystals in medical imaging | MAZZI, Alberto |

## coffee break - Parking area (17:30-18:00)

## Session 4 - Preclinical systems and applications - Room Bonaparte (18:00-19:40)

 - **Conveners: Dr. Goertzen, Andrew**

| time | title | presenter |
|---|---|---|
| 18:00 | MR-compatibility assessment of MADPET4: a small animal PET insert for a 7 T MRI scanner | OMIDVARI, Negar |
| 18:20 | The SAFIR readout prototype | RITZER, Christian |
| 18:40 | Quantitative performance assessment of a preclinical SiPM-based SPECT/MRI insert | CARMINATI, Marco |
| 19:00 | Depth-of-interaction encoding detectors for the SAFIR system | ITO, Mikiko |
| 19:20 | Thallium labelled citrate coated Prussian blue nanoparticles as potential imaging agent | MáTHé, Domokos |

# Tuesday 22 May 2018

## Session 5 - Quantitative MR: the numbers in the picture (part 1) - Room Elena (08:30-10:30)
 - **Conveners: Dr. Tosetti, Michela**

| time | title | presenter |
|------|-------|-----------|
| 08:30 | BURZTE: Silent Quantitative MRI using ZTE combined with BURST | SCHULTE, Rolf |
| 08:50 | High-Resolution Reconstruction of Arterial Spin Labelling MRI Using Anatomical Priors | MEHRANIAN, Abolfazl |
| 09:10 | Assessment of mesoscopic properties of brain iron through a model-based analysis of magnetic susceptibility and $R2^*$ MRI in multiple sclerosis | SCHWESER, Ferdinand |
| 09:30 | Quantitative Evaluation of Magnetic Susceptibility Dynamics during Brain Function | COSTAGLI, Mauro |
| 09:50 | MR Fingerprinting: Clinical and Scientific Rationale | GULANI , Vikas |

## coffee break - Parking area (10:30-11:00)

## Session 6 - Quantitative MR: the numbers in the picture (part 2) - Room Elena (11:00-12:40)
 - **Conveners: Dr. Buonincontri, Guido**

| time | title | presenter |
|------|-------|-----------|
| 11:00 | Comprehensive Quantitative Imaging: MR Fingerprinting and Beyond" | SEIBERLICH, Nicole |
| 11:40 | Multiparametric Mapping accounting for Flow: MR Angiography in the Transient-state | GóMEZ, Pedro |
| 12:00 | Delayed Gadolinium Enhanced Relaxation Mapping of Osteoarthritis with Magnetic Resonance Fingerprinting | KAGGIE, Joshua Daniel |
| 12:20 | Magnetic Resonance Fingerprinting: Quantifying Relaxation Times and Fat Signal Fraction in the Breast | NOLTE, Teresa |

## Lunch break - Fuoco di bosco restaurant (12:40-15:00)

## Session 7 - Industrial Seminars - Room Elena (15:00-16:15)
 - **Conveners: Prof. Bisogni, Maria Giuseppina**

| time | title | presenter |
|------|-------|-----------|
| 15:00 | MR solutions | |
| 15:15 | Single-Crystal SiPM PET technologies for preclinical cardiac PET/MR imaging (Bruker) | |
| 15:30 | Molecubes | |
| 15:45 | SensL | |
| 16:00 | Hamamatsu | |

## Session 8 - Poster Session I - Parking area (16:15-17:45)
 - **Conveners: Dr. Thielemans, Kris**

| title | presenter | board |
|-------|-----------|-------|

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|---|---|---|
| **Optimization of the timing and energy resolution in a staggered dual layer PET detector** | CARRA, Pietro | 28 |
| **On the Clinical Value of CNN-processed Ultra-low-dose Amyloid PET Reconstructions** | CHEN, Kevin | 26 |
| **Evaluation of template-enhanced ZTE attenuation correction for PET/MR imaging** | DELSO, Gaspar | 27 |
| **Towards Implementing Multiparametric PET/MR for RT Planning in Head and Neck Cancer** | OLIN, Anders | 25 |
| **The quantitative performance and optimal regularization parameter in BSREM reconstructions of clinical 68Ga-PSMA PET/MR** | TER VOERT, Edwin | 24 |
| **Schedule design for parameter quantification in the transient state using Bayesian optimization** | FALLO, Giada | 23 |
| **SPECT and MRI evaluation increases understanding pathophysiology in a murine model of sepsis associated encephalopathy** | MáTHé, Domokos | 22 |
| **Results of a multivariate analysis of Magnetic Resonance texture parameters for rectal cancer patient staging** | MANCINI TERRACCIANO, Carlo | 21 |
| **Reduced Acquisition Time PET/MR Quantification: a comparison of tracer delivery estimation methods** | SCOTT, Catherine | 20 |
| **Quantitative radial magnetic resonance fingerprinting in the animal brain** | SAWIAK, Stephen | 19 |
| **Quantitative evaluation of the Mediso high resolution PET/CT-system LFER-150** | ROSENQVIST, Göran | 18 |
| **Predicting the lower count limit for adequate scatter correction using dynamic data with low count frames on Siemens mMR** | DALGAARD, Maya Ottilia | 17 |
| **NEMA tests on a whole-body TOF PET/MR scanner with and without simultaneous MR pulse sequences** | SCIFO, Paola | 16 |
| **Motion estimation and motion correction using EBER in simultaneous PET-MR imaging** | MéRIDA, Inés | 15 |
| **Magnetic Resonance Fingerprinting with dictionary-based fat and water separation (DBFW MRF)** | CENCINI, Matteo | 14 |
| **Longitudinal [18F]FDG PET-MRI at 9.4 Tesla in Twitcher mice using spatial normalization** | CHOUDHARY, Poonam | 13 |
| **Implementation of cylindrical PET scanners with block detector geometry in STIR** | KHATERI, Parisa | 12 |
| **Implementation and Performance of FORE-FBP for Brain Imaging on the GE SIGNA PET/MR** | FRYER, Tim | 11 |
| **IRIS projector model for monolithic detector based systems: proof of concept using a dedicated brain PET/MR device** | IBORRA, Amadeo | 10 |
| **From SPM8-based to SPM12-based Attenuation Correction for Brain PET/MR Imaging** | TEUHO, Jarmo | 9 |
| **Fractional perfusion: A simple semi-parametric measure for clinical translation of hyperpolarized 13C MR?** | LAUSTSEN, Christoffer | 8 |
| **Feasibility of Quantitative Magnetic Resonance Fingerprinting in Ovarian Tumours for T1 and T2 Mapping** | KAGGIE, Joshua Daniel | 7 |
| **Effect of Brain MRI Coil Attenuation Map Processing on PET Image Quantification and Uniformity for the GE SIGNA PET/MR** | MANAVAKI, Roido | 6 |

| | | |
|---|---|---|
| **Bayesian penalized likelihood reconstruction in PET/MR brain imaging: 11C-PE2I** | SOUSA, João M. | 5 |
| **Assessment of shielding materials for the add-on PET prototype** | SUGA, Mikio | 4 |
| **An Algorithm for Maximum-Likelihood Estimation of the Timing Resolution in TOF-PET** | NIKULIN, Pavel | 3 |
| **A web-based platform for multimodal data integration: the ARIANNA project** | BOSCO, Paolo | 2 |

## coffee break - Parking area (17:45-18:00)

## Session 9 - Software and Quantification: attenuation correction – part 2 - Room Elena (18:00-19:00)
 - Conveners: Dr. Camarlinghi, Niccolò

| time | title | presenter |
|---|---|---|
| 18:00 | Perfect In-Phase ZTE Imaging for Improved MR Attenuation Correction | FERNANDEZ, Brice |
| 18:20 | Accuracy when using R2* as a measure of bone density in PET/MRI: Evaluation using 775 subjects | HINDSHOLM, Amalie |
| 18:40 | Effect of Spatial Resolution on ZTE-based Attenuation Correction | FERNANDEZ, Brice |

## Conference dinner - Maitù restaurant (20:00-22:00)

# Wednesday 23 May 2018

## Session 10 - Software and Quantification: other - Room Elena (08:30-10:30)

 - **Conveners: Prof. Almeida, Pedro**

| time | title | presenter |
|------|-------|-----------|
| 08:30 | Comparison of motion surrogate signal derived from MR images, respiratory belt and PCA-PET for motion correction in PET/MR | THIELEMANS, Kris |
| 08:50 | MR image corrections for PET-system-induced gradient distortions | GROSS-WEEGE, Nicolas |
| 09:10 | A comparison of the hybrid kernel and the parallel level-sets approaches for the inclusion of MR information into PET reconstruction | THIELEMANS, Kris DEIDDA, Daniel |
| 09:30 | High-Resolution Heterogeneous Digital PET Brain Phantom based on the BigBrain Atlas | BELZUNCE, Martin A. |
| 09:50 | Rigid Motion Correction for Brain PET/MR Imaging Using Optical Tracking | SPANGLER-BICKELL, Matthew |
| 10:10 | Motion-Corrected PET Reconstruction with SIRF | BROWN, Richard |

## coffee break - Parking area (10:30-11:00)

## Session 11 - Instrumentation: detectors and electronics - Room Elena (11:00-12:40)

 - **Conveners: Dr. Sportelli, Giancarlo**

| time | title | presenter |
|------|-------|-----------|
| 11:00 | A Novel Method for Determining the Intrinsic Detector Resolution on Monolithic Crystals | GONZALEZ, Antonio |
| 11:20 | A novel DOI Positioning Algorithm for Monolithic Scintillator Crystals in PET based on Gradient Tree Boosting | MüLLER, Florian |
| 11:40 | Characterisation of prototype SiGe monolithic pixel detectors in the TT-PET scanner | FORSHAW, Dean |
| 12:00 | First Measurements with the PETsys TOFPET2 ASIC Evaluation Kit | SCHUG, David |
| 12:20 | MRI compatible power supply for PET detectors of an integrated PET/MR scanner | GAGLIARDI, Vito |

## Lunch break - Fuoco di bosco restaurant (12:40-15:30)

## session 12 - Clinical systems and applications - Room Elena (15:30-18:00)

 - **Conveners: Dr. Cabello, Jorge**

| time | title | presenter |
|------|-------|-----------|
| 15:50 | PET-MR and SPECT-MR Multimodality Probes: Development and Challenges | CHANG-TONG, Yang |
| 16:20 | Design and preliminary performance of the MR component of the TRIMAGE PET/MR/EEG system | RIVOIRE, Julien |
| 16:40 | Clinical evaluation of 11C-Met-avid pituitary lesions using a ZTE-based AC method | DELSO, Gaspar |
| 17:00 | Multi-delay arterial spin labeling MRI accurately identifies reduced perfusion in Moyamoya disease: comparison with a PET/MRI database | ZAHARCHUK, Greg |

| 17:20 | PET stability measurements during simultaneous multi-nuclear (23Na) MRI/PET acquisition | DELSO, Gaspar |
|---|---|---|
| 17:40 | Final Remarks | |

**Farewell cocktail - By the pool (18:00-19:00)**