

# **2019 IEEE Nuclear Science Symposium and Medical Imaging Conference (NSS/MIC 2019)**

**Manchester, United Kingdom  
26 October – 2 November 2019**

**Pages 1-812**



**IEEE Catalog Number: CFP19NSS-POD  
ISBN: 978-1-7281-4165-7**

**Copyright © 2019 by the Institute of Electrical and Electronics Engineers, Inc.  
All Rights Reserved**

*Copyright and Reprint Permissions:* Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***\*\*\* This is a print representation of what appears in the IEEE Digital Library. Some format issues inherent in the e-media version may also appear in this print version.***

|                         |                   |
|-------------------------|-------------------|
| IEEE Catalog Number:    | CFP19NSS-POD      |
| ISBN (Print-On-Demand): | 978-1-7281-4165-7 |
| ISBN (Online):          | 978-1-7281-4164-0 |
| ISSN:                   | 1082-3654         |

**Additional Copies of This Publication Are Available From:**

Curran Associates, Inc  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: (845) 758-0400  
Fax: (845) 758-2633  
E-mail: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

|  |    |
|--|----|
| <b>LABORATORY TESTS OF THE C-BORD RAPIDLY RELOCATABLE TAGGED NEUTRON INSPECTION SYSTEM .....</b>   | 1  |
| <i>A. Sardet ; B. Péröt ; C. Carasco ; G. Sannié ; S. Moretto ; G. Nebbia ; C. Fontana ; F. Pino</i>   |    |
| <b>TIME-RESOLVED SIMULATION OF OPTICAL MODULATION FROM IONIZATION-INDUCED FAST CHARGE CARRIERS.....</b>  | 4  |
| <i>Diana Jeong ; Li Tao ; Jinghui Wang ; Craig S. Levin</i>  |    |
| <b>LIGHTWEIGHT PET CALIBRATION SOURCE.....</b>   | 8  |
| <i>James J. Hamill ; Stefan Siegel</i>   |    |
| <b>DERIVATION OF FBP RECONSTRUCTION ALGORITHM ALONG <math>\pi</math>-LINES USING KATSEVICH-TYPE OF PROOF IN HELICAL CT .....</b>   | 12 |
| <i>Daxin Shi</i>   |    |
| <b><math>^{192}\text{Ir}</math> SOURCE LOCALIZATION VIA GAMMA RAY SKYSHINE USING LARGE VOLUME PIXELATED CDZNTE.....</b>  | 14 |
| <i>David Goodman ; David Chichester ; Zhong He</i>   |    |
| <b>ITERATIVE PET IMAGE RECONSTRUCTION USING ADAPTIVE ADJUSTMENT OF SUBSET SIZE AND RANDOM SUBSET SAMPLING.....</b>   | 17 |
| <i>Robert Twyman ; Simon Arridge ; Brian F. Hutton ; Elise C. Emond ; Ludovica Brusaferrri ; Sangtae Ahn ; Kris Thielemans</i>   |    |
| <b>NEUTRON/GAMMA-RAY PULSE SHAPE DISCRIMINATION WITH A CLYC SCINTILLATOR .....</b>   | 20 |
| <i>Qiyuan Nie ; Jinfu Zhu ; Hao Ma ; Zhi Zeng ; Jianping Cheng ; Junli Li ; Hui Zhang</i>  |    |
| <b>DEPLOYMENT OF THE FIRST PHOTOFISSION MEASUREMENT SYSTEM DEDICATED TO SNM DETECTION IN EUROPE: OUTCOMES AND FUTURE PROSPECTS .....</b>   | 26 |
| <i>Adrien Sari ; Frédéric Carrel ; Amélie Grabowski ; Frédéric Lainé ; Bruno Espinosa ; Jean-Philippe Poli ; Paweł Sibczyński ; Ian Della-Rocca ; Mark Foster ; Asénath Etilé ; Olivier Roig ; Serge Maitrejean ; Sébastien Rogera ; Thibaut Berthelier ; Estelle Gasser ; Micha Slegt ; René De Goede ; Joris Groeneveld ; Hans De Wilde ; Marcel Heerschap</i> |    |
| <b>A DETACHABLE TAIL MODULE FOR THE PHASE II ATLAS PIXEL UPGRADE.....</b>  | 28 |
| <i>A. Petrukhin</i>  |    |
| <b>MACHINE LEARNING AT THE EDGE FOR ULTRA HIGH RATE DETECTORS .....</b>  | 32 |
| <i>Audrey Corbeil Therrien ; Ryan Herbst ; Omar Quijano ; Averell Gatton ; Ryan Coffee</i>   |    |
| <b>COMBINED OSL-RL MEASUREMENTS FOR DOSIMETRY IN MIXED LET PROTON FIELDS.....</b>  | 36 |
| <i>T. Teichmann ; M. J. Gonzalez Torres ; K. Makarevich ; S. Polter ; P. Lachmann ; E. R. Van Der Graaf ; M. J. Van Goethem ; A. Jahn ; J. Henniger ; K. Zuber ; T. Kormoll</i>  |    |
| <b>FEASIBILITY STUDY OF PHOTON COUNTING DETECTOR FOR PRODUCING EFFECTIVE ATOMIC NUMBER IMAGE .....</b>   | 39 |
| <i>Natsumi Kimoto ; Hiroaki Hayashi ; Takumi Asakawa ; Takashi Asahara ; Tatsuya Maeda ; Yuki Kanazawa ; Akitoshi Katsumata ; Shuichiro Yamamoto ; Masahiro Okada</i>  |    |
| <b>LOW-POWER, LARGE-SCALE DISTRIBUTED HYBRID THERMAL SYSTEM TO COOL SILICON DETECTORS IN THE GAPS INSTRUMENT .....</b>   | 43 |
| <i>Hideyuki Fuke ; Shun Okazaki ; Manami Kondo ; Akiko Kawachi ; Hiroyuki Ogawa</i>  |    |
| <b>A DEEP LEARNING METHOD FOR IMAGE BASED ANTI-ALIASING IN CT SCANNERS WITH SINGLE FOCAL SPOT ACQUISITION .....</b>  | 46 |
| <i>Yuan Bao ; Guotao Quan</i>  |    |
| <b>DEVELOPMENT OF A NUCLEAR DATA PROCESSING CODE FRENDY VERSION 1.....</b>   | 48 |
| <i>Kenichi Tada ; Satoshi Kunieda ; Yasunobu Nagaya</i>  |    |
| <b>CHARACTERIZATION OF FABRICATED ARRAY TYPE SI-PIN PHOTODIODE FOR CARGO INSPECTION SYSTEM .....</b>   | 50 |
| <i>Chang Goo Kang ; Su Jin Kim ; Byeong-Hyeok Kim ; Young Soo Kim ; Jeong Min Park ; Jang Ho Ha ; Hyojeong Choi ; Nam-Ho Lee ; Han Soo Kim</i>   |    |
| <b>THE DEVELOPMENT AND PRODUCTION OF THE ADDC FOR THE MICROMEGAS DETECTOR OF THE ATLAS NEW SMALL WHEEL UPGRADE .....</b>   | 52 |
| <i>S. Tang ; H. Chen ; K. Chen ; M. Dimitrios ; V. Polychronakos ; L. Yao</i>  |    |
| <b>THE LARGE AREA PICOSECOND PHOTODETECTOR (LAPPD) 8" MCP-PMT: RECENT RESULTS .....</b>  | 57 |
| <i>Mark A. Popecki ; Michael J. Minot ; Cole J. Hamel</i>  |    |

|  |     |
|--|-----|
| <b>COMPARISON OF A MULTI-PINHOLE STATIONARY SPECT SYSTEM AND A PARALLEL-HOLE HIGH SPEED ROTATIONAL SPECT SYSTEM .....</b>  | 60  |
| <i>Yohei Fujishiro ; Kazumi Murata ; Nobutoku Motomura ; Koichi Ogawa</i>  |     |
| <b>MONTE CARLO COMPARISON OF ALTERNATIVES TO <math>^3\text{He}</math> THERMAL NEUTRON DETECTORS FOR LOGGING APPLICATIONS .....</b>   | 63  |
| <i>A. Bala ; D. Jenkins ; J. R. Brown ; J. Bordes ; P. Joshi ; P. Worthington</i>  |     |
| <b>PHOTON COUNTING METHOD FOR IMPROVEMENT OF ENERGY RESOLUTION IN CANDLES EXPERIMENT .....</b>   | 69  |
| <i>B. T. Khai ; S. Ajimura ; W. M. Chan ; K. Fushimi ; R. Hazama ; T. Iida ; K. Kanagawa ; S. Katagiri ; H. Kino ; T. Kishimoto ; T. Maeda ; K. Nakajima ; M. Nomachi ; I. Ogawa ; T. Ohata ; K. Suzuki ; Y. Takemoto ; Y. Tamagawa ; M. Tozawa ; M. Tsuzuki ; S. Umebara ; S. Yoshida</i> |     |
| <b>IMAGE RECONSTRUCTION WITH AN ELECTRON TRACKING COMPTON CAMERA .....</b>   | 73  |
| <i>Masafumi Inagaki ; Koichi Ogawa ; Toru Tanimori</i>   |     |
| <b>A NEW POTENTIAL METHOD FOR PROTON RADIOGRAPHY .....</b>   | 76  |
| <i>Régis Amblard ; Nicolas Garnier ; Rémy Villeneuve ; Anais Gérard ; Gaëlle Angellier ; Vincent Floquet ; Benjamin Serrano ; Joël Hérault</i>   |     |
| <b>U-NET FOR SPECT IMAGE DENOISING .....</b>   | 81  |
| <i>Maximilian P. Reymann ; Tobias Würfl ; Philipp Ritt ; Bernhard Stimpel ; Michal Cachovan ; A. Hans Vija ; Andreas Maier</i>   |     |
| <b>WHOLE-BODY MOTION CORRECTION IN <math>^{13}\text{N}</math>-AMMONIA MYOCARDIAL PERfusion IMAGING USING POSITRON EMISSION TRACKING.....</b>   | 83  |
| <i>Spencer Manwell ; Ran Klein ; Robert Dekemp ; Tong Xu</i>   |     |
| <b>SIMULATION OF SIGNAL FORMATION AND IMAGING IN A DUAL-SIDED MICRO-STRUCTURED SEMICONDUCTOR NEUTRON DETECTOR .....</b>  | 88  |
| <i>Sanchit Sharma ; Diego Laramore ; Steven Bellinger ; Walter J. McNeil ; Amir A. Bahadori</i>  |     |
| <b>R&amp;D ON PICOSECOND TIMING TOF COUNTER.....</b>   | 91  |
| <i>Ziwei Li ; Xin Li ; Qiang Cao ; Cheng Li ; Yonggang Wang</i>  |     |
| <b>EMIS2TRANS: ATTENUATION CORRECTION FOR BRAIN PET WITH MANY TYPES OF PET LIGANDS USING CONVOLUTIONAL NEURAL NETWORKS .....</b>   | 94  |
| <i>Fumio Hashimoto ; Masanori Ito ; Kibo Ote ; Takashi Isobe ; Hiroyuki Okada ; Yasuomi Ouchi</i>  |     |
| <b>3D CONVOLUTIONAL ADVERSARIAL MICRO-NETWORKS FOR LOW COUNT PET-MR POST-PROCESSING.....</b>   | 97  |
| <i>Casper O. Da Costa-Luis ; Andrew J. Reader</i>  |     |
| <b>IMPROVEMENT OF DETECTION LIMIT IN DIFFERENTIAL DIE-AWAY ANALYSIS SYSTEM FOR NUCLEAR NON-PROLIFERATION AND NUCLEAR SECURITY .....</b>  | 101 |
| <i>A. Ohzu ; M. Maeda ; M. Komeda ; Y. Toh</i>   |     |
| <b>CLINICAL IMPLEMENTATION OF MITS RECONSTRUCTION FOR LINEAR TOMOSYNTHESIS .....</b>   | 105 |
| <i>Dániel Hadházi ; Gábor Horváth</i>  |     |
| <b>PULSE SHAPE DISCRIMINATION AND ENERGY MEASUREMENT IN PHOSWICH DETECTORS USING GATED-INTEGRATOR CIRCUIT .....</b>  | 113 |
| <i>Shirin Pourashraf ; Joshua W. Cates ; Min Sun Lee ; Craig S. Levin</i>  |     |
| <b>CBCT ITERATIVE IMAGE RECONSTRUCTION METHOD USING ENERGY SPECTRUM INFORMATION FOR ADAPTIVE PROTON THERAPY .....</b>  | 115 |
| <i>Takashi Yamaguchi</i>   |     |
| <b>THE IMPROVING OF THE ANGULAR RESOLUTION OF GAMMA-RAY IMAGES OF PORTABLE COMPTON CAMERA WITH SPECIAL ITERATIONAL METHOD .....</b>  | 119 |
| <i>O. P. Ivanov ; V. N. Potapov ; A. M. Safronov ; A. V. Stepanov</i>  |     |
| <b>CT DATA DRIVEN GATING FOR RESPIRATORY MOTION COMPENSATION IN PET/CT .....</b>   | 124 |
| <i>James J. Hamill ; Dustin R. Osborne ; Shelley N. Acuff</i>  |     |
| <b>COMPACT UHF ANTENNA FOR PRECISE MEASUREMENT OF RESPIRATORY SIGNAL IN PET SCANNERS .....</b>   | 128 |
| <i>Ahmadreza Ghahremani ; James Hamill ; Melika Roknsharifi</i>  |     |
| <b>SIPM-BASED DETECTOR FOR HIGH RESOLUTION MEASUREMENTS IN PULSED RADIATION FIELDS: PRELIMINARY FINDINGS .....</b>   | 131 |
| <i>L. Pavelic ; I. Lackovic ; M. Suric Mihic ; I. Prlic</i>  |     |
| <b>ENERGY CALIBRATION OF A PHOTON-COUNTING CT WITH K-EDGE ABSORPTION FEATURES .....</b>  | 134 |
| <i>Kazumi Murata ; Koichi Ogawa</i>  |     |
| <b>DEVELOPMENT OF NEUTRON RADIATION DAMAGE MODEL AND COMPARISON OF THE EFFECTS OF NEUTRON AND PROTON IRRADIATION ON MACROSCOPIC PROPERTIES OF THE SILICON DETECTORS .....</b>  | 136 |
| <i>Chakresh Jain ; Saumya ; Geetika Jain ; Namrata Agrawal ; Piyush Sikka ; Ashutosh Bhardwaj ; Kirti Ranjan</i>   |     |

|  |     |
|--|-----|
| <b>IMPORTANCE OF CONSIDERING THE RESPONSE FUNCTION OF PHOTON COUNTING DETECTORS WITH THE GOAL OF PRECISE MATERIAL IDENTIFICATION .....</b>   | 141 |
| <i>Takumi Asakawa ; Hiroaki Hayashi ; Natsumi Kimoto ; Takashi Asahara ; Tatsuya Maeda ; Shuji Koyama ; Shuichiro Yamamoto ; Masahiro Okada</i>  |     |
| <b>AN EXPLORATION OF THE PROGNOSTIC UTILITY OF SHORTENED DYNAMIC IMAGING PROTOCOLS FOR PET-FDG SCANS.....</b>  | 148 |
| <i>Qi Wu ; Finbarr O'Sullivan ; Mark Muzi ; David A. Mankoff</i>   |     |
| <b>HIGH DATA-RATE NEUTRON-SENSITIVE PIXELATED DETECTOR USING SILICON PHOTOMULTIPLIER .....</b>   | 151 |
| <i>Su-Ann Chong ; Richard Riedel ; Theodore Visscher ; Cornelius Dohanue ; Bruce Hannan ; Christopher Montcalm ; Jason Hayward</i>   |     |
| <b>2D ENERGY HISTOGRAMS FOR SCATTER ESTIMATION IN AN SIPM PET SCANNER.....</b>   | 155 |
| <i>James J. Hamill</i>   |     |
| <b>PRELIMINARY PERFORMANCE EVALUATION OF ADAPTIVE MULTI-PINHOLE COLLIMATORS FOR SPECT .....</b>  | 159 |
| <i>Ilker Ozsahin ; Greta S. P. Mok</i>   |     |
| <b>AN ANALOG FRONT-END ASIC DESIGN FOR 16-CHANNEL SIPM READOUT IN PET DETECTORS.....</b>   | 161 |
| <i>Xiaoyu Zhou ; Yonggang Wang ; Yong Xiao ; Zhengqi Song</i>  |     |
| <b>RISE: TOMOGRAPHIC IMAGE RECONSTRUCTION IN POSITRON EMISSION TOMOGRAPHY .....</b>  | 163 |
| <i>Christos Lemesios ; Loizos Koutsantonis ; Costas N. Papanicolas</i>   |     |
| <b>NOVEL VOLUME BASED APPROACH TO ESTIMATE CONTRAST RECOVERY FOR NEMA IMAGE QUALITY PHANTOM .....</b>  | 167 |
| <i>Ahmadreza Ghahremani ; Deepak Bharkhada ; Maurizio Conti</i>  |     |
| <b>NDX: NEUTRON DOSE RATE METERS WITH EXTENDED CAPABILITIES.....</b>   | 169 |
| <i>Pavel V. Degtiarenko</i>  |     |
| <b>TILE TDAQ INTERFACE MODULE FOR THE PHASE-II UPGRADE OF THE ATLAS TILE CALORIMETER.....</b>  | 174 |
| <i>Xiaoguang Yue</i>   |     |
| <b>DYNAMIC PET IMAGE RECONSTRUCTION USING THE WAVELET KERNEL METHOD.....</b>   | 178 |
| <i>Zahra Ashouri ; Chad R. Hunter ; Benjamin A. Spencer ; Guobao Wang ; Richard M. Dansereau ; Robert. A. Dekemp</i>   |     |
| <b>PRISM MIRROR LIGHT GUIDE FOR ENHANCED GAMMA RAY LOCALIZATION IN PET .....</b>   | 181 |
| <i>Andy Labella ; Rick Lubinsky ; Wei Zhao ; Amir H. Goldan</i>  |     |
| <b>A 40MW/CHANNEL IMAGE SENSOR LINE DRIVER IC WITH INDEPENDENTLY TUNABLE GAIN AND SETTLING TIME .....</b>  | 185 |
| <i>Aikaterini Papadopoulou ; Carl Grace ; Peter Denes ; Armin Karcher</i>  |     |
| <b>NEUTRON IMAGING AND SPECTROSCOPY OF PLUTONIUM USING A HANDHELD DUAL PARTICLE IMAGER.....</b>  | 187 |
| <i>William M. Steinberger ; Nathan P. Giha ; Michael Bondin ; Shaun D. Clarke ; Sara A. Pozzi</i>  |     |
| <b>A NOVEL APPROACH TO DETERMINING THE DISTANCE FROM A SOURCE WITH A SINGLE MEASUREMENT AND NO PRIOR KNOWLEDGE OF SOURCE ACTIVITY .....</b>  | 190 |
| <i>C. Cooke ; J. J. Velthuis ; L. Beck ; P. Martin</i>   |     |
| <b>AN ENGINEERING OF MULTILAYERED LEAD OXIDE PHOTOCONDUCTOR FOR LAG-FREE X-RAY DIGITAL DETECTOR.....</b>   | 194 |
| <i>Oleksandr Grynko ; Gytis Juska ; Alla Reznik</i>  |     |
| <b>A PET/EPR SIMULTANEOUS IMAGING SYSTEM FOR ASSESSING TUMOR HYPOXIA: DEVELOPMENT AND INITIAL IMAGING RESULTS .....</b>  | 197 |
| <i>Heejong Kim ; Boris Epel ; Subramanian Sundramoorthy ; Hsiu-Ming Tsai ; Eugene Barth ; Inna Gertsenshteyn ; Howard Halpern ; Yuexuan Hua ; Qingguo Xie ; Chin-Tu Chen ; Chien-Min Kao</i> |     |
| <b>PULSE SHAPE DISCRIMINATION OF CSI(TL) WITH PHOTOMULTIPLIER TUBE AND MPPCS .....</b>   | 199 |
| <i>N. V. H. Viet ; K. Takahisa ; M. Nomachi ; T. Shima ; B. T. Khai ; R. Takaishi ; K. Miyamoto</i>  |     |
| <b>RADIATION HARDNESS STUDY ON A FULLY DEPLETED PINNED PHOTODIODE CMOS IMAGE SENSOR .....</b>  | 202 |
| <i>Xiao Meng ; Konstantin D. Stefanov ; Michael A. Holland ; Andrew D. Holland</i>   |     |
| <b>DEEP LEARNING FOR MRI-BASED CT SYNTHESIS: A COMPARISON OF MRI SEQUENCES AND NEURAL NETWORK ARCHITECTURES .....</b>  | 204 |
| <i>Andrés Larroza ; Laura Moliner ; Juan M. Álvarez-Gómez ; Sandra Oliver ; Héctor Espinós-Morató ; Marina Vergara-Díaz ; María J. Rodríguez-Álvarez</i>                                     |     |

|   |     |
|---|-----|
| <b>FORWARD MODELING USING EXPERIMENTAL RESPONSE FUNCTIONS FOR HIGH-RESOLUTION CZT IMAGING SPECTROMETERS.....</b>  | 208 |
| <i>Christopher G. Wahl ; Brian Kitchen ; Alec Goldberg ; Alan Balkany ; Steven Brown ; Willy Kaye</i>   |     |
| <b>SENSITIVITY AND ATTENUATION WEIGHTED MULTI-BED PET ACQUISITION AND RECONSTRUCTION .....</b>  | 210 |
| <i>Girish Bal ; Vladimir Panin ; Frank Kehren ; Bing Feng ; Bernard Bendriem</i>  |     |
| <b>SPECT/CT SCATTER ESTIMATION USING A DEEP CONVOLUTIONAL NEURAL NETWORK: IMPLEMENTATION IN Y-90 IMAGING.....</b>   | 214 |
| <i>Haowei Xiang ; Hongki Lim ; Jeffrey A. Fessler ; Yuni K. Dewaraja</i>  |     |
| <b>TEST RESULTS FOR A DUAL-DETECTOR GAMMA CAMERA WITH A VARIABLE ANGLE SLANT-HOLE COLLIMATOR .....</b>  | 217 |
| <i>S. Lee ; B. L. Welch ; A. G. Weisenberger</i>  |     |
| <b>RESPONSE OF SILICON PHOTOMULTIPLIERS DIRECTLY EXPOSED TO X-RAY FLUXES.....</b>   | 220 |
| <i>Giovanni Ambrosi ; Mirco Caprai ; Emanuele Fiandrini ; Maria Ionica ; Leonello Servoli ; Luca Tosti ; Valerio Vagelli</i>  |     |
| <b>THE RICH DETECTOR OF THE NA62 EXPERIMENT AT CERN .....</b>   | 223 |
| <i>Francesco Brizioli</i>   |     |
| <b>PERCIVAL P2M-FSI DETECTOR: FIRST TEST AT A SYNCHROTRON RING BEAMLINE WITH TENDER X-RAY PHOTONS .....</b>   | 229 |
| <i>A. Marras ; C. B. Wunderer ; J. Correa ; S. Lange ; B. Boitrelle ; M. Kuhn ; F. Krivan ; I. Shevyakov ; M. Zimmer ; M. Hoesch ; F. Scholz ; K. Bagschik ; N. Guerrini ; B. Marsh ; I. Sedgwick ; G. Cautero ; D. Giuretti ; R. Menk ; G. Pinaroli ; L. Stebel ; T. Nicholls ; U. Pedersen ; N. Tartoni ; A. Greer ; S. Y. Rah ; H. J. Hyun ; K. S. Kim ; F. Orsini ; H. Graafsma</i>   |     |
| <b>OPERATION AND CALIBRATION OF A HIGHLY GRANULAR HADRON CALORIMETER WITH SIPM-ON-TILE READ-OUT .....</b>   | 231 |
| <i>O. Pinto</i>   |     |
| <b>FELIX: THE NEW READOUT SYSTEM FOR THE ATLAS DETECTOR.....</b>  | 235 |
| <i>Marco Trovato</i>  |     |
| <b>STUDY OF THE EFFECTS OF RADIATION AT THE CERN GAMMA IRRADIATION FACILITY ON THE CMS DRIFT TUBE MUON DETECTOR FOR HL-LHC .....</b>  | 238 |
| <i>G. Abbiendi ; J. Alcaraz Maestre ; A. Álvarez Fernández ; B. Álvarez González ; N. Amapane ; I. Bachiller ; J. M. Barcala ; L. Barcellana ; C. Battilana ; M. Bellato ; G. Bencze ; M. Benettini ; N. Beni ; A. Benvenuti ; L. C. Blanco Ramos ; A. Boletti ; A. Bragagnolo ; J. A. Brochero Cifuentes ; V. Cafaro ; A. Calderon ; E. Calvo ; A. Cappati ; R. Carlin ; C. A. Carrillo Montoya ; F. R. Cavallo ; J. M. Cela Ruiz ; M. Cepeda ; M. Cerrada ; B. Chazin Quero ; P. Checchia ; L. Ciano ; N. Colino ; D. Corti ; G. Cotto ; J. Cuevas ; M. Cuffiani ; G. M. Dallavalle ; D. Dattola ; B. De La Cruz ; P. De Remigis ; J. F. De Tróconiz ; C. Erice Cid ; C. F. Bedoya ; F. Fabbri ; A. Fanfani ; D. Fasanella ; P. Fernandez Manteca ; J. Fernández Menéndez ; J. P. Fernández Ramos ; S. Folgueras ; M. C. Fouz ; D. Francia Ferrero ; J. Garcia Romero ; F. Gasparini ; U. Gasparini ; V. Giordano ; F. Gomez Casademunt ; F. Gonella ; I. González Caballero ; J. R. González Fernández ; O. González López ; S. Gosh ; S. Gay López ; A. Gozzelino ; A. Griggio ; G. Grossi ; C. Guandalini ; L. Guiducci ; M. Gulmini ; T. Hebbeker ; C. Heidemann ; J. M. Hernández ; K. Hoepfner ; F. Iemmi ; R. Isocrate ; M. I. Josa ; B. Kiani ; S. Lacaprara ; S. Lo Meo ; S. Marcellini ; M. Margoni ; J. Marin ; C. Mariotti ; I. Martín Martín ; J. J. Martínez Morales ; C. Martínez Rivero ; S. Maselli ; G. Masetti ; A. T. Meneguzzo ; M. Merschmeyer ; G. Mocellin ; L. Modenese ; A. Molinero ; J. Molnar ; F. Montecassiano ; D. Moran ; J. J. Navarrete ; F. Navarra ; Á. Navarro Tobar ; J. C. Oller ; M. Passaseo ; J. Pazzini ; M. Pegoraro ; J. Puerta Pelayo ; M. Pelliccioni ; B. Philipp ; J. Piedra Gomez ; G. L. Pinna Angioni ; N. Pozzobon ; M. Presilla ; C. Priels ; F. Primavera ; J. C. Puras Sánchez ; I. Redondo ; D. D. Redondo Ferrero ; H. Reithler ; T. Rodrigo ; V. Rodríguez Bouza ; J. Roemer ; P. Ronchese ; R. Rossin ; F. Rotondo ; T. Rovelli ; S. Sánchez Cruz ; S. Sánchez Navas ; J. Sastre ; L. Scodellaro ; A. Sharma ; F. Simonetto ; M. S. Soares ; A. Staiano ; Z. Szillasi ; D. F. Teysier ; N. Toniolo ; E. Torassa ; D. Trocino ; B. Ujvari ; S. Ventura ; R. Vilar Cortabitarte ; J. Vizan Garcia ; M. Zanetti ; F. P. Zantis ; G. Zilizi ; P. Zotto</i> |     |
| <b>PRELIMINARY INVESTIGATION OF THE IMPACT OF AXIAL RING SPLITTING ON IMAGE QUALITY FOR THE COST REDUCTION OF TOTAL-BODY PET .....</b>  | 244 |
| <i>N. Efthimiou ; A. C. Whitehead ; M. Stockhoff ; C. Thyssen ; S. J. Archibald ; S. Vandenbergh</i>  |     |
| <b>HIGH-RESOLUTION PET DETECTOR WITH 100 PS COINCIDENCE TIME RESOLUTION USING SIDE-BY-SIDE PHOSWICH DESIGN.....</b>   | 248 |
| <i>Min Sun Lee ; Joshua W. Cates ; Craig S. Levin</i>   |     |
| <b>BRAIN MRI COIL ATTENUATION MAP PROCESSING FOR THE GE SIGNA PET/MR: IMPACT ON PET IMAGE QUANTIFICATION AND UNIFORMITY .....</b>   | 250 |
| <i>Roido Manavaki ; Young T. Hong ; Tim D. Fryer</i>  |     |
| <b>RANGE VERIFICATION USING PROMPT GAMMA-RAYS WITH ENERGY SPECTRAL ANALYSIS IN GEANT4 BASED PROTON THERAPY SIMULATION .....</b>   | 252 |
| <i>Tsukasa Aso ; Hiroki Oke ; Teiji Nishio</i>  |     |
| <b>KINETIC MODEL FITTING WITH FORCED CONVEXIFICATION .....</b>  | 257 |
| <i>László Szirmay-Kalos</i>   |     |

|  |     |
|--|-----|
| <b>MOTION COMPENSATION FOR DYNAMIC PET WITH CONTINUOUS MOTION BLUR</b>   | 263 |
| <i>László Szirmay-Kalos ; Dóra Váryú ; Milán Magdics</i>   |     |
| <b>QUANTITATIVE ANALYSIS OF ENERGY RESOLUTION AND PULSE SHAPE DISCRIMINATION OF CLYC DETECTOR WITH INTEGRATED DIGITIZERS</b>   | 269 |
| <i>Jinfu Zhu ; Jingjun Wen ; Tao Xue ; Lin Jiang ; Zhi Zeng ; Liangjun Wei ; Jianmin Li ; Yinong Liu</i>   |     |
| <b>STATUS OF THE DEVELOPMENT OF A SILICON PHOTOMULTIPLIER BASED CAMERA MODULE FOR THE LARGE SIZE TELESCOPES OF THE CHERENKOV TELESCOPE ARRAY</b>                       | 272 |
| <i>D. Depaoli ; A. Berti ; A. Chiavassa ; D. Corti ; A. De Angelis ; F. Di Pierro ; M. Mallamaci ; M. Mariotti ; R. Rando ; F. Rotondo ; P. Vallania ; C. Vigorito</i> |     |
| <b>A LOOKUP TABLE BASED APPROACH TO ESTIMATE RANDOMS FOR PET STUDIES</b>   | 276 |
| <i>Mehmet Aykaç ; Vladimir Y. Panin</i>  |     |
| <b>A SCINTILLATION DETECTOR WITH A BARIUM FLUORIDE CRYSTAL AND A PHOTOMULTIPLIER WITH AN ALGAN-BASED PHOTOCATHODE AND MICROCHANNEL PLATES</b>                          | 281 |
| <i>N. V. Atanov ; Yu. I. Davydov ; V. V. Glagolev ; S. I. Ivanov ; V. N. Jmerik ; D. V. Nechaev ; V. V. Tereshchenko</i>   |     |
| <b>UV-LED INDUCED RECOVERY OF RADIATION DAMAGE IN GLASS AND PLASTIC SCINTILLATORS</b>  | 284 |
| <i>James W. Wetzel ; Jeffrey B. Li ; Liam S. Mackey ; Burak Bilki ; David R. Winn ; Yasir Onel</i>   |     |
| <b>CAN CE:GD<sub>3</sub>AL<sub>2</sub>GA<sub>3</sub>O<sub>12</sub> SCINTILLATORS DETECT THERMAL NEUTRONS?</b>  | 288 |
| <i>C. L. Wang</i>  |     |
| <b>A FCN-BASED UNSUPERVISED LEARNING MODEL FOR DEFORMABLE CHEST CT IMAGE REGISTRATION</b>  | 292 |
| <i>Qiming Fang ; Xiaomeng Gu ; Jichao Yan ; Jun Zhao ; Qiang Li</i>  |     |
| <b>SIMULATION AND IMAGE RECONSTRUCTION OF FAST NEUTRON IMAGING SYSTEM</b>  | 296 |
| <i>Liang He ; Hui Li ; Deyuan Li ; Xiaodong Zhang</i>  |     |
| <b>NONINVASIVE ESTIMATION OF MACRO-PARAMETERS FOR DYNAMIC PET IMAGES USING DEEP LEARNING</b>   | 299 |
| <i>Bo Wang ; Dongsheng Ruan ; Huafeng Liu</i>  |     |
| <b>DUALRES-UNET: LIMITED ANGLE ARTIFACT REDUCTION FOR COMPUTED TOMOGRAPHY</b>  | 303 |
| <i>Tao Zhang ; Hewei Gao ; Yuxiang Xing ; Zhiqiang Chen ; Li Zhang</i>   |     |
| <b>RADIOLOGICAL CHARACTERISTICS OF CANDU SPENT FUEL STACKS USING OPTICAL FIBER PROBE</b>   | 306 |
| <i>Seunghoon Park ; Yewon Kim ; Sungyeop Joung</i>   |     |
| <b>A HIGH-RESOLUTION VERNIER DELAY GENERATOR USING DELAY-ADJUSTABLE CARRY CHAINS ON FPGAs</b>  | 309 |
| <i>Ke Cui ; Xiangyu Li ; Zhongjie Ren ; Rihong Zhu</i>   |     |
| <b>GATE OPTICAL SIMULATION OF A DUAL-ENDED READOUT DOI PET DETECTOR WITH TRAPEZOID GEOMETRY</b>  | 311 |
| <i>Han Gyu Kang ; Hideaki Tashima ; Fumihiko Nishikido ; Taiga Yamaya</i>  |     |
| <b>DESIGN AND PERFORMANCE OF DATA ACQUISITION AND CONTROL SYSTEM FOR THE MUON G-2 LASER CALIBRATION</b>  | 313 |
| <i>S. Mastrianni</i>   |     |
| <b>AN ANGULAR SENSITIVITY STUDY OF THE BORON-LINED HONEYCOMB CONVERTOR NEUTRON DETECTOR USED FOR THE SMALL ANGLE NEUTRON SCATTERING</b>                                | 315 |
| <i>Chao Deng ; Xianguo Tuo ; Shuming Peng ; Yangyi Yu ; Zhujun Fang ; Qibiao Wang ; Lixing Liu ; Yigang Yang</i>   |     |
| <b>DEEP LEARNING BASED RESPIRATORY PATTERN CLASSIFICATION AND APPLICATIONS IN PET/CT MOTION CORRECTION</b>   | 318 |
| <i>Yin Guo ; Nicha Dvornek ; Yihuan Lu ; Yu-Jung Tsai ; James Hamill ; Michael Casey ; Chi Liu</i>   |     |
| <b>SIMULTANEOUS RECONSTRUCTION AND SEGMENTATION OF MRI IMAGE BY MANIFOLD LEARNING</b>  | 323 |
| <i>Pengcheng Xu ; Huafeng Liu</i>  |     |
| <b>STUDY OF REPEATABILITY OF A NOVEL PET FLOW PHANTOM</b>  | 328 |
| <i>R. Siekkinen ; J. Teuho ; A. K. Kirjavainen ; K. Koskensalo ; A. Saraste ; M. Teräs</i>   |     |
| <b>VARIOUS DESIGN FOR 2-D TIME ENCODED APERTURE GAMMA-NEUTRON IMAGING SYSTEM</b>   | 332 |
| <i>Xiuzuo Liang ; Lei Shuai ; Xianchao Huang ; Yantao Liu ; Zhiming Zhang ; Cunfeng Wei ; Jiajia Zhai ; Xiong Xiao ; Long Wei</i>                                      |     |
| <b>ACQUIRING AND PROCESSING OF LIGHT FIELD IMAGES IN A TISSUE EQUIVALENT SCINTILLATOR BASED ON 3D DOSIMETRY</b>  | 335 |
| <i>Xuewen Yan ; Hua Li ; Liang He ; Deyuan Li ; Xiongxin Dai ; Xiaodong Zhang</i>  |     |

|   |     |
|---|-----|
| <b>PROTON BEAM RANGE VERIFICATION WITH SECONDARY RADIATION FROM TITANIUM IMPLANTS.....</b>  | 338 |
| Claus Maximilian Bäcker ; Christian Bäumer ; Aaron Bley ; Pedro Fragoso Costa ; Marcel Gerhardt ; Ken Herrmann ; Samantha Kauer ; Kevin Kröninger ; Christian Nitsch ; Hilda Milani Siregar ; Beate Timmermann ; Azad Yazgan  |     |
| <b>FIRST PRODUCTION OF 50-<math>\mu</math>M-THICK RESISTIVE AC-COUPLED SILICON DETECTORS (RSD) AT FBK.....</b>  | 340 |
| M. Mandurrino ; R. Arcidiacono ; M. Boscardin ; N. Cartiglia ; G.-F. Dalla Betta ; M. Ferrero ; F. Ficarella ; L. Pancheri ; G. Paternoster ; F. Siviero ; M. Tornago   |     |
| <b>THE EFFECT OF A COLLECTOR RING ON LOW GAIN AVALANCHE DETECTOR FOR HIGH ENERGY PHYSICS APPLICATION.....</b>   | 343 |
| Xingan Zhang ; Ran He ; Qiguang Tan ; Guangqing Yan ; Kun Liang ; Dejun Han ; Ru Yang   |     |
| <b>ELECTRICAL AND SPECTROSCOPIC PROPERTIES OF SiC DETECTORS .....</b>   | 347 |
| Mykola Brynza ; Eduard Belas ; Petr Praus ; Jindrich Pipek ; Roman Grill  |     |
| <b>DOPING OF BISMUTH IONS INTO LEAD BROMIDE PEROVSKITES FOR DECREASING DARK CURRENT OF X-RAY DETECTORS .....</b>  | 350 |
| Haodi Wu ; Weicheng Pan ; Nian Liu ; Xinyuan Du ; Guangda Niu ; Jiang Tang  |     |
| <b>DEVELOPMENT OF SEALED <math>^{22}\text{Na}</math> PHANTOMS FOR PET SYSTEM QA/QC: UNIFORMITY AND STABILITY EVALUATION .....</b>   | 352 |
| Go Akamatsu ; Eiji Yoshida ; Takahiro Mikamoto ; Takamasa Maeda ; Hidekatsu Wakizaka ; Hideaki Tashima ; Yuichiro Wakitani ; Mikio Matsumoto ; Taiga Yamaya   |     |
| <b>DESIGN OF CAPACITIVE FRISCH GRID TLBR DETECTORS FOR RADIONUCLIDE IDENTIFICATION .....</b>  | 355 |
| A. Kargar ; J. Christian ; H. Kim ; L. Cirignano ; M. Squillante ; M. S. Squillante ; E. Weststrate ; A. Bolotnikov ; G. Carini ; A. Dellapenna ; J. Fried ; M. B. Smith ; E. M. Johnston ; M. R. Koslowsky ; A. L. Miller ; K. S. Shah                                       |     |
| <b>PERFORMANCE OF LINEAR PSD METHODS ON <math>\alpha/\gamma</math> DISCRIMINATION FOR LABR<sub>3</sub> : CE SCINTILLATION DETECTORS WITH DIFFERENT SAMPLING PROPERTIES .....</b>  | 360 |
| Jingjun Wen ; Jinfu Zhu ; Tao Xue ; Lin Jiang ; Jirong Cang ; Liangjun Wei ; Ming Zeng ; Zhi Zeng ; Hao Ma ; Jianmin Li ; Yinong Liu  |     |
| <b>4<math>\pi</math> SPECTROMETRIC GAMMA-RAY SCANNER WITH ANTI-COLLIMATOR.....</b>  | 363 |
| O. P. Ivanov ; V. N. Potapov ; I. A. Semin ; S. M. Ignatov ; A. M. Safronov ; A. V. Stepanov  |     |
| <b>APPLICATION OF A NOVEL MACHINE LEARNING APPROACH TO SiPM-BASED NEUTRON/GAMMA DETECTION AND DISCRIMINATION.....</b>   | 368 |
| Matthew Durbin ; Marc A. Wonders ; Azaree T. Lintereur ; Marek Flaska   |     |
| <b>SUBTLE MR GUIDANCE FOR PARTIAL VOLUME CORRECTION OF PET IMAGES: A COMPARISON OF TECHNIQUES .....</b>   | 370 |
| Yansong Zhu ; Yuanyuan Gao ; Arman Rahimim  |     |
| <b>AN ILLUSTRATION OF THE USE OF MODEL-BASED BOOTSTRAPPING FOR EVALUATION OF UNCERTAINTY IN KINETIC INFORMATION DERIVED FROM DYNAMIC PET .....</b>  | 373 |
| Fengyun Gu ; Qi Wu ; Finbarr O'Sullivan ; Jian Huang ; Mark Muzi ; David A. Mankoff   |     |
| <b>MULTI-WELL AVALANCHE SELENIUM DETECTOR FOR TIME-OF-FLIGHT PET .....</b>  | 376 |
| Andy Labello ; Wei Zhao ; Amir H. Goldan  |     |
| <b>COMMERCIALIZATION OF THE LI-FOIL MULTI-WIRE PROPORTIONAL COUNTER NEUTRON DETECTOR, A BACKPACK RADIATION DETECTOR DESIGN .....</b>  | 380 |
| Benjamin W. Montag ; Steven L. Bellinger ; Nathaniel S. Edwards ; Jackson Lage ; Douglas S. McGregor ; Taylor R. Ochs ; Lester Sideropoulos ; Jacob M. Terrell ; Logan M. Whitmore ; Bryan Willis   |     |
| <b>A SIMPLE EVALUATION OF THE BENEFIT OF COMBINED KINETIC ANALYSIS OF MULTIPLE INJECTION DYNAMIC PET SCANS .....</b>  | 385 |
| Fengyun Gu ; Finbarr O'Sullivan ; Mark Muzi ; David A. Mankoff  |     |
| <b>A 100 PS TOF DETECTION SYSTEM FOR ON-LINE RANGE-MONITORING IN HADRONTHERAPY .....</b>  | 388 |
| Sara Marcatili ; Sébastien Curtoni ; Denis Dauvergne ; Ferid Haddad ; Maxime Jacquet ; Charbel Koumeir ; Jean Michel Létang ; Jayde Livingstone ; Vincent Métivier ; Laurent Gallin-Martel ; Marie-Laure Gallin-Martel ; Jean-François Muraz ; Noël Servagent ; Étienne Testa |     |
| <b>GEOMETRIC CALIBRATION AND FELDKAMP RECONSTRUCTION FOR OFFSET-DETECTOR CBCT .....</b>   | 392 |
| Matt Hemsley ; Rolf Clackdoyle ; Elsayed Ali ; Tong Xu  |     |
| <b>SPECTRAL CT INSPIRED DATA ENGINEERING FOR COLON POLYP CLASSIFICATION .....</b>   | 397 |
| Yongfeng Gao ; Weiguo Cao ; Shu Zhang ; Yongyi Shi ; Marc J. Pomeroy ; Matthew A. Barish ; Perry J. Pickhardt ; Zhengrong Liang   |     |
| <b>GEOMETRIC TOMOGRAPHY FOR MEASURING RECTANGULAR RADIOTHERAPY FIELDS FROM SIX PROJECTIONS .....</b>  | 401 |
| Laurent Desbat ; Simon Rit ; Rolf Clackdoyle ; Patrice Jalade ; Julien Ribouton ; Patrick Pittet  |     |

|  |     |
|--|-----|
| <b>PET MYOCARDIAL PERFUSION IMAGING OF EXTREMELY OBESE PATIENTS: A STUDY WITH AN ULTRA-LARGE ANTHROPOMORPHIC CARDIAC-TORSO PHANTOM</b>   | 405 |
| <i>Mark F. Smith ; Jason Jenkins</i>   |     |
| <b>DEVELOPMENT OF A GPU-BASED MONT CARLO SIMULATION TOOL FOR PET</b>   | 407 |
| <i>Youfang Lai ; Yuncheng Zhong ; Ananta Chalise ; Shiwei Zhou ; Yiping Shao ; Mingwu Jin ; Xun Jia ; Yujie Chi</i>  |     |
| <b>NON-INVASIVE PET HEAD-MOTION CORRECTION VIA OPTICAL 3D POSE TRACKING</b>  | 410 |
| <i>James Goddard ; Mark Mandelkern</i>   |     |
| <b>THE PERFORMANCE OF BELLE II DATA ACQUISITION SYSTEM IN THE FIRST PHYSICS RUN</b>  | 414 |
| <i>R. Itoh ; M. Nakao ; S. Yamada ; S. Y. Suzuki ; Q. Zhou ; T. Konno ; Z-A. Liu ; J. Zhao ; O. Hartwich ; Sh. Park ; C. Li ; N. Braun ; Y. Guan ; K. Lautenbach ; S. Reiter ; B. Sprück</i>   |     |
| <b>RESEARCH PROGRESS ON AN INTELLIGENT X-RAY BACKSCATTERING NONDESTRUCTIVE TESTING ROBOT FOR THE INTERNAL INSPECTION OF PETROLEUM PIPELINES</b>  | 418 |
| <i>Hui Li ; Yongan Wang ; Xiaodong Zhang</i>   |     |
| <b>A TECHNIQUE OF IN-SITU ANNEALING AND TEMPERATURE MONITORING FOR SILICON PHOTOMULTIPLIERS</b>  | 421 |
| <i>Hongmin Liu ; Yu Peng ; Jinyan Long ; Wenxing Lv ; Kun Liang ; Ru Yang ; Dejun Han</i>  |     |
| <b>SIMULATION SYSTEM FOR PLANAR APERIODIC CAVITY IMAGER BASED ON COMPRESSED SENSING</b>  | 424 |
| <i>Chao He ; Yuanyuan Liu ; Ziran Zhao ; Lingbo Qiao ; Zhijun Chi ; Jianping Cheng</i>   |     |
| <b>USING SPARSE CODING IN SUPER-RESOLUTION RECONSTRUCTION FOR PET</b>  | 428 |
| <i>X. Ren ; S.-J. Lee</i>  |     |
| <b>EXPERIMENTAL DEMONSTRATION OF SELECTIVE ISOTOPE CT-IMAGING BASED ON NUCLEAR RESONANCE FLUORESCENCE ABSORPTION METHOD</b>  | 431 |
| <i>Khaled Ali ; Hideaki Ohgaki ; Heishun Zen ; Toshiteru Kii ; Takehito Hayakawa ; Toshiyuki Shizuma ; Hiroyuki Toyokawa ; Yoshitaka Taira ; Violeta Iancu ; Gabriel Turturica ; Calin Alexandru Ur ; Masaki Fujimoto ; Masahiro Katoh</i> |     |
| <b>FAST CHEMICAL EXCHANGE SATURATION TRANSFER (CEST) MRI WITH DUAL-CHANNEL SEGMENTED RF IRRADIATION</b>  | 433 |
| <i>Yudong Zhong ; Xiaodong Zhou ; Qun Chen ; Yiping Du</i>   |     |
| <b>AN ENERGY-RESOLVED PHOTON-COUNTING READOUT ELECTRONICS FOR SCINTILLATOR BASED ON POLE-ZERO COMPENSATION AND TOT METHOD</b>  | 436 |
| <i>Xiaobing Yue ; Canwen Liu ; Zhi Deng</i>  |     |
| <b>IMPACT OF TIMING RESOLUTION ON DIRECT TOF PET RECONSTRUCTION WITH SPARSE DETECTORS</b>  | 439 |
| <i>Jun Li ; Jun Zhao ; Yun Dong ; Yang Lv</i>  |     |
| <b>VASE: A 256-CHANNEL READOUT ASIC FOR COLUMN-PARALLEL CCDS WITH 14B DYNAMIC RANGE</b>  | 443 |
| <i>C. R. Grace ; P. Denes ; E. Fong ; A. Goldschmidt ; A. Papadopoulou</i>   |     |
| <b>DEVELOPMENT OF MICRO PIXEL CHAMBER USING LOW TEMPERATURE CO-FIRED CERAMICS</b>  | 445 |
| <i>Atsuhiro Ochi ; Hikaru Setsuda ; Kazuki Komiya ; Yoko Takeuchi</i>  |     |
| <b>REAL-TIME DATA DISPLAY AND STORAGE DEVICE FOR PULSED NEUTRON SCATTERING EXPERIMENT</b>  | 447 |
| <i>K. Toh ; T. Nakamura ; K. Sakasai ; H. Yamagishi</i>  |     |
| <b>GENERATIVE ADVERSARIAL NETWORK FOR DENOISING IN DUAL GATED MYOCARDIAL PERFUSION SPECT USING A POPULATION OF PHANTOMS AND CLINICAL DATA</b>  | 450 |
| <i>Jingzhang Sun ; Qi Zhang ; Duo Zhang ; P. Hendrik Pretorius ; Michael A. King ; Greta S. P. Mok</i>   |     |
| <b>REDUNDANT TIMING CROSSCHECKING FOR FRONTEND DIGITIZATION SYSTEMS: PRINCIPLE AND VALIDATION TESTS</b>  | 452 |
| <i>Jinyuan Wu ; Daren Chen ; Jingjing Xu</i>   |     |
| <b>EVALUATION OF THE BENEFIT OF PARTIAL VOLUME CORRECTION FOR HIGH RESOLUTION PET SCANNERS</b>   | 456 |
| <i>Evangelos Raptis ; Laura M. Parkes ; Jose M. Anton-Rodriguez ; Stephen F. Carter ; Karl Herholz ; Julian C. Matthews</i>  |     |
| <b>A PROGRAMMABLE FPGA-BASED MULTI-CHANNEL ARBITRARY 500 MS/S PULSE GENERATOR AND VERSATILE VERIFICATION SYSTEM FOR FAST FRONT-END ELECTRONICS</b>   | 459 |
| <i>Qader Dorosty Hasankiadeh</i>   |     |

|   |     |
|---|-----|
| <b>MACHINE LEARNING APPROACH FOR GAMMA-RAY SPECTRA IDENTIFICATION FOR RADIOACTIVITY ANALYSIS .....</b>  | 463 |
| <i>T. Kin ; J. Goto ; M. Oshima</i>   |     |
| <b>VALIDATION AND CHARACTERIZATION OF THE GALTRACE SILICON DETECTOR ARRAY DEMONSTRATOR.....</b>   | 465 |
| <i>S. Capra ; G. Benzoni ; A. Compagnucci ; J. M. Deltoro ; J. Dueñas ; A. Goasduff ; D. Mengoni ; A. Pullia ; J. Skowronski ; I. Zanon ; S. Ziliani</i>  |     |
| <b>FEASIBILITY STUDY ON ENERGY-DEPENDENT NEUTRON FLUX MONITOR USING MULTI-CORE SOF DETECTOR .....</b>   | 468 |
| <i>Masayori Ishikawa ; Kentaro Baba ; Ryo Ogawara ; Naoto Shimizu ; Yoshinori Sakurai</i>   |     |
| <b>TIMING PERFORMANCE OF CHERENKOV-RADIATOR-INTEGRATED MCP-PMT .....</b>  | 472 |
| <i>Rsyoke Ota ; Kyohei Nakajima ; Izumi Ogawa ; Yoichi Tamagawa ; Hideki Shimoi ; Motohiro Suyama ; Tomoyuki Hasegawa</i>   |     |
| <b>P2M: FIRST OPTICAL CHARACTERISATION RESULTS OF A 2MPixel CMOS IMAGE SENSOR FOR SOFT X-RAY DETECTION .....</b>  | 476 |
| <i>I. Sedgwick ; A. Marras ; C. B. Wunderer ; J. Correa ; S. Lange ; B. Boitrelle ; F. Orsini ; M. Kuhn ; F. Krivan ; I. Shevyakov ; M. Zimmer ; N. Guerrini ; B. Marsh ; G. Cautero ; D. Giuressi ; R. Menk ; G. Pinaroli ; L. Stebel ; A. Greer ; T. Nicholls ; U. Pedersen ; N. Tartoni ; S. Y. Rah ; H. J. Hyun ; K. S. Kim ; H. Graafsma</i> |     |
| <b>VALIDATION OF SPECT-CT IMAGE RECONSTRUCTION FOR THE MEDISO ANYSCAN SCP SCANNER IN STIR .....</b>   | 479 |
| <i>Daniel Deidda ; Benjamin A. Thomas ; Kelley Ferreira ; Warda Heetun ; Attila Forgács ; Brian F. Hutton ; Kris Thielemans ; Andrew P. Robinson</i>  |     |
| <b>A RANDOM ESTIMATION FRAMEWORK FOR VARIABLE COINCIDENCE SORTING METHODS IN DIGITAL PET .....</b>  | 483 |
| <i>Ang Li ; Peng Xiao ; Qingguo Xie</i>   |     |
| <b>PET IMAGE RECONSTRUCTION USING NONLOCAL MEANS REGULARIZATION BASED ON STRUCTURAL SIMILARITY .....</b>  | 487 |
| <i>Lei Fang ; Lingli Yang ; Bo Zhang ; Bingxuan Li ; Xiangsong Zhang ; Qingguo Xie ; Peng Xiao</i>  |     |
| <b>A μTCA BACK-END FIRMWARE FOR DATA ACQUISITION AND SLOW CONTROL OF THE CLARYS COMPTON CAMERA .....</b>  | 490 |
| <i>C. Caplan ; O. Allegri ; J.-P. Cachemiche ; B. Carlus ; X. Chen ; D. Dauvergne ; R. Della-Negra ; M. Fontana ; L. Gallin-Martel ; M.-L. Gallin-Martel ; J. Hérault ; D. Lambert ; G.-N. Lu ; M. Magne ; H. Mathez ; G. Montarou ; C. Morel ; M. Rodo Bordera ; E. Testa ; Y. Zoccarato</i>   |     |
| <b>RELIABLY IMPLEMENTED NON-DESTRUCTIVE SPECTROMETRIC METHOD FOR THE CHARACTERIZATION OF VOLUME CONTAMINATION OF OBJECTS AT NUCLEAR INDUSTRY .....</b>  | 494 |
| <i>V. N. Potapov ; E. A. Stepanov ; A. V. Stepanov ; O. P. Ivanov</i>   |     |
| <b>SIMULATION STUDY OF INTERACTION POSITION CORRECTION FOR COMPTON CAMERA BASED ON ORIGIN ENSEMBLES WITH SUBDIVISION GRID AND TRANSMISSION PROBABILITY .....</b>  | 502 |
| <i>Zhiyang Yao ; Zhiqiang Chen ; Shizheng He ; Qinhuan Hou ; Yongshun Xiao</i>  |     |
| <b>MULTI-MODULE DEEP LEARNING FOR ENHANCED AND ACCELERATED PET IMAGE RECONSTRUCTION .....</b>   | 505 |
| <i>James Bland ; Abolfazl Mehranian ; Casper Da Costa-Luis ; Andrew J. Reader</i>   |     |
| <b>MODEL-BASED DEEP LEARNING PET IMAGE RECONSTRUCTION USING FORWARD-BACKWARD SPLITTING EXPECTATION MAXIMISATION .....</b>   | 508 |
| <i>Abolfazl Mehranian ; Andrew J. Reader</i>  |     |
| <b>CLINICAL ASSESSMENT OF MR-ASSISTED PET IMAGE RECONSTRUCTION ALGORITHMS FOR LOW-DOSE BRAIN PET IMAGING .....</b>  | 512 |
| <i>Abolfazl Mehranian ; James Bland ; Colm J. McGinnity ; Alexander Hammers ; Andrew J. Reader</i>  |     |
| <b>A PORTABLE TEST-BENCH FOR REAL-TIME RADIATION DAMAGE MEASUREMENTS IN SCINTILLATING AND WAVELENGTH-SHIFTING FIBRES.....</b>   | 515 |
| <i>Peter R. Hobson ; David R. Smith</i>   |     |
| <b>POSITRONIUM IMAGING.....</b>   | 517 |
| <i>Pawel Moskal</i>   |     |
| <b>TOWARDS AN AI-DRIVEN REAL TIME VERIFICATION OF RADIOTHERAPY TREATMENTS .....</b>   | 520 |
| <i>C. De Sio ; J. J. Velthuis ; L. Beck ; R. P. Hugtenburg ; J. L. Pritchard</i>  |     |
| <b>A MONTE CARLO MODEL FOR TEMPORAL RESPONSE AND PHOTON DETECTION EFFICIENCY OF SINGLE PHOTON AVALANCHE DIODE.....</b>  | 523 |
| <i>X. Lu ; Y. Zhang ; Y. Yang ; Q. Peng ; J. Xu ; X. Wang</i>   |     |

|   |     |
|---|-----|
| <b>IMPACT OF TIME-OF-FLIGHT ON RESPIRATORY MOTION MODELLING USING NON-ATTENUATION-CORRECTED PET .....</b>   | 526 |
| <i>Alexander C. Whitehead ; Elise C. Emond ; Nikos Eftimioiu ; Adeyemi Akintonde ; Scott W. Wollenweber ; Charles W. Stearns ; Brian F. Hutton ; Jamie R. McClelland ; Kris Thielemans</i>  |     |
| <b>USING CDZNT-E DETECTOR WITH ANTI-COLLIMATOR SHIELD TO MEASURE SPECIFIC ACTIVITY OF THE CONTAMINATED SOILS.....</b>   | 529 |
| <i>Anatoly G. Volkovich ; Alexey V. Stepanov ; Victor N. Potapov ; Ilia A. Semin ; Vyacheslav E. Stepanov</i>   |     |
| <b>APPROACHES TO IMPROVING THE DETECTION SENSITIVITY OF OPTICAL MODULATION BASED RADIATION DETECTION METHOD FOR POSITRON EMISSION TOMOGRAPHY .....</b>  | 532 |
| <i>Yuli Wang ; Li Tao ; Craig S. Levin ; Jianfeng Xu</i>  |     |
| <b>RESULTS FROM THE COMPACT MUON SOLENOID GE1/1 SLICE TEST AND STATUS OF THE INSTALLATION AND COMMISSIONING OF THE GE1/1 DETECTORS.....</b>   | 535 |
| <i>Elizabeth Rose Starling</i>  |     |
| <b>DIRECT MEASUREMENT OF IONIZATION CHARGES IN SINGLE-PHASE LIQUID XENON COMPTON TELESCOPE FOR 3<math>\gamma</math> MEDICAL IMAGING .....</b>   | 543 |
| <i>Yajing Xing ; Mounir Abaline ; Stéphane Acounis ; Nicolas Beaupère ; Jean-Luc Beney ; Julien Bert ; Stéphane Bouvier ; Clotilde Canot ; Thomas Carlier ; Hervé Chanal ; Michel Cherel ; Jean-Pierre Cussonneau ; Sara Diglio ; Debora Giovagnoli ; Jérôme Idier ; Françoise Kraeber-Bodéré ; Patrick Le Ray ; Frédéric Lefèvre ; Samuel Manen ; Julien Masbou ; Eric Morteau ; Nicolas Pillet ; Didier Roy ; Laurent Royer ; Jean-Sébastien Stutzmann ; Richard Vandaele ; Dimitris Visvikis ; Yuwei Zhu ; Dominique Thers</i> |     |
| <b>ARC-DETECTOR: DESIGN OF A CdTe PHOTON-COUNTING DETECTOR FOR THE X-RAY PAIR DISTRIBUTION FUNCTION BEAMLINE AT DIAMOND LIGHT SOURCE .....</b>  | 547 |
| <i>E. N. Gimenez ; P. A. Chater ; G. Creavin ; G. Dennis ; A. Fairley ; I. Horswell ; D. Omar ; J. Spiers ; N. Tartoni</i>  |     |
| <b>CAN DEEP LEARNING DETECT ESOPHAGEAL LESIONS IN PET-CT SCANS? .....</b>   | 550 |
| <i>Ian Ackerley ; Rhodri Smith ; James Scuffham ; Mark Halling-Brown ; Emma Lewis ; Emilio Spezi ; Vineet Prakash ; Kevin Wells</i>   |     |
| <b>A HIGH DYNAMIC RANGE ASIC FOR TIME OF FLIGHT PET WITH PIXELATED AND MONOLITHIC CRYSTALS.....</b>   | 554 |
| <i>S. Gómez ; D. Sánchez ; D. Gascón ; J. M. Cela ; L. Freixas ; R. Graciani ; R. Manera ; J. Marín ; J. Mauricio ; J. Navarrete ; J. C. Oller ; J. M. Pérez ; P. Rato Mendes ; A. Sanmukh ; O. Vela</i>  |     |
| <b>CONTINUOUS BED MOTION ACQUISITION WITH AXIALLY SHORT PHANTOM FOR SYSTEM SETUP AND QUALITY CONTROL .....</b>  | 557 |
| <i>Vladimir Y. Panin ; Mehmet Aykac</i>   |     |
| <b>MPA-SSA, DESIGN AND TEST OF A 65NM ASIC-BASED SYSTEM FOR PARTICLE TRACKING AT HL-LHC FEATURING ON-CHIP PARTICLE DISCRIMINATION .....</b>   | 561 |
| <i>Davide Ceresa ; Gianmario Bergamin ; Alessandro Caratelli ; Jan Kaplon ; Kostas Kloukinas ; Simone Scarfi ; Yusuf Leblebici</i>  |     |
| <b>EFFECTS OF PET SYSTEM PERFORMANCE CHARACTERISTICS ON IMAGE QUALITY FOR NEURO-PET .....</b>   | 564 |
| <i>Sangtae Ahn ; Robert L. Harrison ; William Hunter ; Paul E. Kinahan ; Sergei Dolinsky ; Robert S. Miyaoka</i>  |     |
| <b>HYPER-KAMIOKANDE DETECTOR .....</b>  | 566 |
| <i>Yousuke Kataoka</i>  |     |
| <b>MULTIMODAL SIMULATION OF LARGE AREA SILICON PHOTOMULTIPLIERS FOR TIME RESOLUTION OPTIMIZATION .....</b>  | 568 |
| <i>D. Sánchez ; S. Gómez ; D. Gascón ; L. Garrido ; R. Graciani ; R. Manera ; J. Mauricio ; A. Sanmukh ; P. Garcia</i>  |     |
| <b>POSITRON EMISSION TOMOGRAPHY WITH SPARSE BLOCK RINGS AND CONTINUOUS BED MOTION .....</b>   | 571 |
| <i>Nicolas A. Karakatsanis ; Sara A. Zein ; Sadek A. Nehmeh</i>   |     |
| <b>SIMPLIFIED AUTOMATED SEGMENTATION OF ACUTE ISCHEMIC STROKE LESIONS FROM MULTIMODAL MRI: A KNOWLEDGE-BASED LEARNING APPROACH .....</b>  | 577 |
| <i>S. Nazari-Farsani ; M. Nyman ; T. Karjalainen ; M. Bucci ; J. Isojärvi ; L. Nummenmaa</i>  |     |
| <b>A 1 M<sup>3</sup> GAS TIME PROJECTION CHAMBER WITH OPTICAL READOUT FOR DIRECTIONAL DARK MATTER SEARCHES: THE CYGNO EXPERIMENT .....</b>  | 579 |
| <i>E. Baracchini ; R. Bedogni ; F. Bellini ; L. Benussi ; S. Bianco ; C. Capoccia ; M. Caponero ; G. Cavoto ; I. A. Costa ; E. Di Marco ; G. D'Imperio ; F. Iacoangeli ; G. Maccarone ; M. Marafini ; G. Mazzitelli ; A. Messina ; A. Orlandi ; E. Paoletti ; L. Passamonti ; A. Pelosi ; F. Petrucci ; D. Piccolo ; D. Pierluigi ; D. Pinci ; F. Renga ; A. Russo ; G. Saviano ; S. Tomassini</i>  |     |
| <b>CHARACTERIZATION OF NON-UNIFORM 2-BIT SIGMA-DELTA MODULATOR FOR GAMMA-RAY DETECTORS.....</b>   | 584 |
| <i>Maria Ruiz-Gonzalez ; Lars R. Furenlid</i>   |     |

|  |     |
|--|-----|
| <b>PERFORMANCE OF SILICON SENSOR QUALITY CONTROL CENTRE DEVELOPED AT THE UNIVERSITY OF DELHI .....</b>   | 587 |
| <i>C. Jain ; Saumya ; Abhijeet ; S. Sondh ; A. Kumar ; G. Jain ; A. Bhardwaj ; K. Ranjan ; A. Messineo ; M. A. Ciocci ; M. T. Grippo ; S. Parolia ; K. Androsov</i>  |     |
| <b>LOCAL TOPOLOGY PRESERVATION FOR VASCULAR CENTERLINE MATCHING USING A HYBRID MIXTURE MODEL .....</b>   | 591 |
| <i>Siming Bayer ; Zhiwei Zhai ; Maddalena Strumia ; Xiaoguang Tong ; Ying Gao ; Marius Staring ; Berend Stoel ; Martin Ostermeier ; Rebecca Fahrig ; Arya Nabavi ; Andreas Maier ; Nishant Ravikumar</i>   |     |
| <b>MULTIPLE SOURCE LOCALIZATION BY SENSOR FUSION OF DIGITAL MAGNETIC COMPASS DATA WITH SPECTROSCOPIC DATA .....</b>  | 594 |
| <i>Elmar Jacobs ; Christian Henke ; Wolf Schykowski ; Nikolai Teofilov ; Marcus J. Neuer</i>   |     |
| <b>SPECT IMAGING RECONSTRUCTION METHOD BASED ON DEEP CONVOLUTIONAL NEURAL NETWORK .....</b>  | 597 |
| <i>Charalambos Chrysostomou ; Loitzos Koutsantonis ; Christos Lemesios ; Costas N. Papanicolas</i>   |     |
| <b>ASSESSMENT OF QUANTIFICATION ACCURACY WITH ML SCATTER SCALING FOR VARIABLE COUNT STATISTICS .....</b>   | 601 |
| <i>Harshali Bal ; Vladimir Y. Panin ; Maurizio Conti</i>   |     |
| <b>INVESTIGATION OF DEFECT STRUCTURE OF CdTe SEMIINSULATING CRYSTALS USING HIGH RESOLUTION X-RAY DIFFRACTION .....</b>   | 605 |
| <i>O. Maslyanchuk ; I. Fodchuk ; T. Mykytuk ; A. Kuzmin ; I. Hutsuliak ; T. Aoki</i>   |     |
| <b>PERFORMANCE OF HIGH-VOLTAGE SILICON JFETS AFTER NEUTRON IRRADIATION .....</b>   | 608 |
| <i>Gabriele Giacomini ; Wei Chen ; David Lynn</i>  |     |
| <b>IMPROVED RADIATION SENSING WITH METHYLAMMONIUM LEAD BROMIDE PEROVSKITE SEMICONDUCTORS .....</b>   | 611 |
| <i>Ryan Tan ; Bogdan Dryzhakov ; Andrew Shayotovich ; Andrew Naylor ; Kate Higgins ; Jessica Charest ; Bin Hu ; Mahshid Ahmadi ; Eric Lukosi</i>   |     |
| <b>SHALLOW CONVOLUTIONAL NEURAL NETWORK FOR 3D GAMMA RAY LOCALIZATION IN HIGH RESOLUTION PET .....</b>   | 614 |
| <i>Andy Labello ; Paul Vaska ; Wei Zhao ; Amir H. Goldan</i>   |     |
| <b>A CMOS FRONT-END FOR TIMING AND CHARGE READOUT OF SILICON PHOTOMULTIPLIERS .....</b>  | 618 |
| <i>P. A. P. Calò ; S. Petrignani ; C. Marzocca ; B. Markovic ; A. Dragone</i>  |     |
| <b>SIMULTANEOUS DUAL ISOTOPE TOF-PET IMAGING .....</b>   | 623 |
| <i>Zhengzhi Liu ; Min Sun Lee ; Garry Chinn ; Craig Levin</i>  |     |
| <b>WIRELESS AND ROBUST RADIOACTIVITY DETECTOR FOR ENVIRONMENTAL MONITORING .....</b>   | 626 |
| <i>Marco Carminati ; Giovanni L. Montagnani ; Luca Lorusso ; Emanuele Lavelli ; Davide Di Vita ; Giuseppe Morandi ; Paolo Rizzacasa ; Carlo Fiorini</i>  |     |
| <b>INVESTIGATION OF TRENCH TECHNOLOGY ON SILICON DEVICE FABRICATION .....</b>  | 629 |
| <i>W. Chen ; G. Giacomini ; T. Krings ; A. K. Rumaiz ; D. P. Siddons</i>   |     |
| <b>REINFORCEMENT LEARNING FOR OBJECT DETECTION IN PET IMAGING .....</b>  | 633 |
| <i>Rhodri L Smith ; Ian M Ackerley ; Kevin Wells ; Lee Bartley ; Stephen Paisey ; Chris Marshall</i>   |     |
| <b>MACHINE LEARNING ALGORITHMS FOR IMPROVING THE DOSE RATE MEASUREMENT IN HANDHELD HOMELAND SECURITY INSTRUMENTATION .....</b>   | 637 |
| <i>Marcus J. Neuer ; Nikolai Teofilov ; Wolf Schykowski ; Christian Henke ; Elmar Jacobs</i>   |     |
| <b>THE BIS78 PAD TRIGGER BOARD FOR THE PHASE-I UPGRADE OF THE LEVEL-1 MUON TRIGGER OF THE ATLAS EXPERIMENT AT THE LHC .....</b>  | 640 |
| <i>Salvatore Loffredo</i>  |     |
| <b>AN ADAPTIVE BOOSTING STRATEGY FOR GLCM-CNN MODEL IN DIFFERENTIATING THE MALIGNANT FROM BENIGN POLYPS .....</b>  | 643 |
| <i>Shu Zhang ; Zhengrong Liang ; Weiguo Cao ; Yongfeng Gao ; Perry J. Pickhardt</i>  |     |
| <b>A TIME-OF-FLIGHT GAMMA CAMERA DATA ACQUISITION SYSTEM FOR HADRONTHERAPY MONITORING .....</b>  | 647 |
| <i>X. Chen ; O. Allegrini ; B. Carlus ; C. P. C. Caplan ; L. Caponetto ; J.-P. Cacheux ; S. Curtoni ; D. Dauvergne ; R. Della-Negra ; M. Fontana ; L. Gallin-Martel ; M.-L. Gallin-Martel ; J. Héault ; D. Lambert ; G.-N. Lu ; M. Magne ; S. Marcatili ; H. Mathez ; C. Morel ; G. Montarou ; E. Testa ; Y. Zoccarato</i> |     |
| <b>DEVELOPMENT OF ULTRATHIN 12 <math>\mu\text{m}</math> THICK STRAW TUBES FOR THE TRACKING DETECTOR OF COMET EXPERIMENT .....</b>  | 650 |
| <i>N. Tsverava ; G. Adamov ; A. Moiseenko ; H. Nishiguchi ; B. Sabirov ; Z. Tsamalaidze</i>  |     |
| <b>STUDY OF LUTETIUM-BASED SCINTILLATORS FOR PET SYSTEM DESIGN WITH 100-PS COINCIDENCE TIME RESOLUTION .....</b>   | 654 |
| <i>Min Sun Lee ; Joshua W. Cates ; Maciej Kapusta ; Matthias Schmand ; Craig S. Levin</i>  |     |

|   |     |
|---|-----|
| <b>LARGE-AREA Si(Li) DETECTORS FOR X-RAY SPECTROMETRY AND PARTICLE TRACKING FOR THE GAPS EXPERIMENT .....</b>   | 656 |
| <i>Field Rogers ; Mengjiao Xiao ; Kerstin Perez ; Steven Boggs ; Tyler Erjavec ; Lorenzo Fabris ; Hideyuki Fuke ; Charles J. Hailey ; Masayoshi Kozai ; Alex Lowell ; Norman Madden ; Massimo Manghisoni ; Steve McBride ; Valerio Re ; Elisa Riceputi ; Nathan Saffold ; Yuki Shimizu ; Gianluigi Zampa</i>  |     |
| <b>XEMIS2 LIQUID XENON COMPTON CAMERA FOR SMALL ANIMAL <math>\gamma\gamma</math> MEDICAL IMAGING: SCINTILLATION LIGHT MEASUREMENT .....</b>   | 659 |
| <i>Yuwei Zhu ; Stéphane Acounis ; Nicolas Beaupère ; Jean-Luc Beney ; Julien Bert ; Stéphane Bouvier ; Clotilde Canot ; Thomas Carlier ; Michel Cherel ; Jean-Pierre Cussonneau ; Sara Diglio ; Debora Giovagnoli ; Jérôme Idier ; Françoise Kraeber-Bodéré ; Patrick Le Ray ; Frédéric Lefèvre ; Julien Masbou ; Eric Morteau ; Jean-Sébastien Stutzmann ; Dimitris Visvikis ; Yajing Xing ; Dominique Thers</i>   |     |
| <b>R&amp;D OF NEW HIGH-PERFORMANCE SCINTILLATOR INCLUDING DOUBLE BETA DECAY NUCLEI.....</b>   | 663 |
| <i>Takashi Iida ; Kei Kamada ; Masao Yoshino ; Kyoung Jin Kim ; Shunsuke Kurosawa ; Akira Yoshikawa</i>   |     |
| <b>RESTRICTED BOLTZMANN SPECTRUM DECONVOLUTION .....</b>  | 666 |
| <i>Marcus J. Neuer</i>  |     |
| <b>FIRST PERFORMANCE EVALUATION OF MEXSIC - A READOUT ASIC FOR ANALOG SiPM BASED CHERENKOV DETECTORS.....</b>   | 669 |
| <i>Sergio A. Rosales-Nunez ; Alejandro Bautista-Castillo ; Daniel Durini ; Victor R. Gonzalez-Díaz ; Alejandro Díaz-Sánchez ; José M. Rocha-Pérez ; Jose De J. Rangel-Magdaleno ; Ruben Alfaró ; Arturo Iriarte</i>   |     |
| <b>FIRST PERFORMANCE RESULTS OF THE LYCORIS LARGE AREA STRIP BEAM TELESCOPE .....</b>   | 674 |
| <i>Uwe Kraemer ; Martin Breidenbach ; Dietrich R. Freytag ; Claus Kleinwort ; Benjamin A. Reese ; Marcel Stanitzki ; Mengqing Wu</i>  |     |
| <b>THE STATUS OF THE 20 INCH MCP-PMT AND ITS APR TEST RESULT .....</b>  | 679 |
| <i>Qi Wu ; Sen Qian ; Yiqi Cao ; Guorui Huang ; Muchun Jin ; Zhen Jin ; Dong Li ; Kun Li ; Shulin Liu ; Lishuang Ma ; Ling Ren ; Shuguang Si ; Jianning Sun ; Xingchao Wang ; Haoda Zhang ; Yao Zhu</i>   |     |
| <b>DESIGN, FABRICATION AND EVALUATION OF ANTI-REFLECTION FILMS COATED ON LYSO SCINTILLATORS.....</b>  | 683 |
| <i>Qiangqiang Xie ; Baihezi Ye ; Sivei Xie ; Xi Zhang ; Jianfeng Xu ; Qiyu Peng</i>   |     |
| <b>PLUG-AND-PLAY TOF-PET MODULE READOUT BASED ON TDC-ON-FPGA AND GIGABIT OPTICAL FIBER NETWORK.....</b>   | 685 |
| <i>F. Garzetti ; S. Salgaro ; E. Venialgo ; N. Lusardi ; N. Corna ; A. Geraci ; E. Charbon</i>  |     |
| <b>THE FARCOMS DETECTION SYSTEM: THE FIRST APPLICATION IN A REAL EXPERIMENT .....</b>   | 689 |
| <i>L. Acosta ; L. Auditore ; C. Boiano ; G. Cardella ; A. Castoldi ; M. D'Andrea ; F. De Benedetti ; E. De Filippo ; S. De Luca ; F. Favela ; F. Fichera ; E. Geraci ; N. Giudice ; B. Gnoffo ; A. Grimaldi ; C. Guazzoni ; G. Lanzalone ; F. Librizzi ; C. Maiolino ; S. Maffesanti ; N. S. Martorana ; S. Norella ; A. Pagano ; E. V. Pagano ; M. Papa ; T. Parsani ; G. Passaro ; S. Pirrone ; G. Politi ; L. Quattrocchi ; F. Rizzo ; P. Russotto ; G. Saccà ; G. Salemi ; D. Sciliberto ; V. L. Sicari ; A. Trifirò ; M. Trimarchi</i> |     |
| <b>SIMULATION STUDIES OF THE DECODING ACCURACY OF HEXAGON DETECTORS FOR BRAIN-DEDICATED PET.....</b>  | 693 |
| <i>H. Peng ; S. Xie ; X. Zhang ; Q. Huang ; J. Xu ; Q. Peng</i>   |     |
| <b>A VERSATILE READOUT AND TRIGGER SYSTEM FOR THE HIGH ENERGY PARTICLE DETECTOR ONBOARD THE SATELLITE CSES-02.....</b>  | 695 |
| <i>Valentina Scotti ; Marco Mese ; Giuseppe Osteria</i>   |     |
| <b>CALIBRATION STRATEGY AND TOOLS FOR THE FARCOMS DETECTION SYSTEM .....</b>  | 698 |
| <i>C. Guazzoni ; V. L. Sicari</i>   |     |
| <b>EPIXM: A CMOS MONOLITHIC SENSOR FOR LCLS II .....</b>  | 702 |
| <i>C. Tamma ; L. Rota ; P. Caragiulo ; B. Markovic ; J. Segal ; M. Kwiatkowski ; D. Doering ; G. Blaj ; C. Kenney ; A. Dragone ; G. Haller</i>  |     |
| <b>A MONTE CARLO APPROACH FOR BOOSTING TRANSIENT DOPAMINE RELEASE DETECTION SENSITIVITY .....</b>   | 706 |
| <i>Connor W. J. Bevington ; Ju-Chieh Kevin Cheng ; Vesna Sossi</i>  |     |
| <b>ENHANCING THE SHAPE RECOVERY ABILITY OF CERENKOV LUMINESCENCE TOMOGRAPHY BY USING LOCAL CORRELATION.....</b>   | 709 |
| <i>Meishan Cai ; Zhenhua Hu ; Jie Tian</i>  |     |
| <b>DEVELOPMENT AND OPTIMIZATION OF THE Tb<sup>3+</sup>/Ce<sup>3+</sup> CO-DOPED GD<sub>2</sub>O<sub>3</sub> SCINTILLATION GLASS FIBER FACEPLATE FOR COLD NEUTRON MICROSCOPE.....</b>  | 711 |
| <i>Deyuan Li ; Hua Li ; Mengqing Niu ; Hui Li ; Pei Qiao ; Jingwen Lv ; Xiaodong Zhang</i>  |     |
| <b>DETECTING NUCLEAR RADIATION WITH AN UNCOVERED CMOS CAMERA &amp; A LONG-WAVELENGTH PASS FILTER .....</b>  | 713 |
| <i>Zhangfa Yan ; Yulin Hu ; Gangqin Huang ; Tiantian Dai ; Zhaojun Zhang ; Qingyang Wei</i>   |     |

|   |     |
|---|-----|
| <b>SELF SUPERVISED SUPER-RESOLUTION PET USING A GENERATIVE ADVERSARIAL NETWORK.....</b>   | 716 |
| <i>Tzu-An Song ; Samadrita Roy Chowdhury ; Fan Yang ; Joyita Dutta</i>  |     |
| <b>TIMING PERFORMANCE OF ORGANIC SCINTILLATORS FOR POSITRON ANNIHILATION LIFETIME SPECTROSCOPY .....</b>  | 719 |
| <i>Ming Fang ; Nathan Bartholomew ; Angela Di Fulvio</i>  |     |
| <b>A NOVEL PRECLINICAL PET SCANNER CONSTRUCTED WITH STACKS OF SLICED MONOLITHIC SCINTILLATOR RINGS .....</b>  | 724 |
| <i>Xi Zhang ; Baihezi Ye ; Siwei Xie ; Qiangqiang Xie ; Qiu Huang ; Jianfeng Xu ; Qiyu Peng</i>   |     |
| <b>PRELIMINARY INVESTIGATION OF AUTO-CLASSIFICATION OF RESPIRATORY TRACE USING CONVOLUTIONAL NEURAL NETWORK FOR ADAPTIVE RESPIRATORY GATED MYOCARDIAL PERFUSION SPECT .....</b> | 726 |
| <i>Greta S. P. Mok ; Qi Zhang ; Jingzhang Sun ; Duo Zhang ; P. Hendrik Pretorius ; Michael A. King</i>  |     |
| <b>ACCURATE PET PROJECTOR APPROXIMATIONS USING RAY-DRIVEN PROJECTORS WITH IMAGE DOMAIN PSF MODELING.....</b>  | 729 |
| <i>Wenyuan Qi ; Li Yang ; Chung Chan ; Evren Asma</i>   |     |
| <b>LOW-DOSE CT IMAGE DENOISING USING CYCLE-CONSISTENT ADVERSARIAL NETWORKS.....</b>   | 732 |
| <i>Zeheng Li ; Junzhou Huang ; Lifeng Yu ; Yujie Chi ; Mingwu Jin</i>   |     |
| <b>A LARGE AREA POSITION-SENSITIVE SCINTILLATION NEUTRON DETECTOR FOR UPGRADING SENJU DIFFRACTOMETER .....</b>  | 735 |
| <i>T. Nakamura ; K. Toh ; M. Ebine ; A. Birumachi ; K. Sakasai</i>  |     |
| <b>A MEASUREMENT OF (E,XN) CROSS SECTIONS OF <math>^{181}\text{Ta}</math> WITH 100MEV ELECTRONS.....</b>  | 737 |
| <i>Yuqi Yang ; Yangyi Yu ; Xiufeng Weng ; Yigang Yang</i>   |     |
| <b>DEVELOPMENT OF A PORTABLE BETA PARTICLE DETECTOR FOR PRECISION CANCER DETECTION USING GEM .....</b>  | 739 |
| <i>Donghyun Kim ; Jaehoon Yu ; Yujie Chi ; Mingwu Jin</i>   |     |
| <b>DEMONSTRATION OF DETECTING SOFT X-RAYS USING THE CMOS DETECTOR TOWARD FUTURE ASTRONOMICAL MISSION.....</b>   | 743 |
| <i>M. Arimoto ; N. Ogino ; T. Sawano ; D. Yonetoku ; J. S. Hiraga ; D. Yuhi ; S. Hatori ; K. Kume ; T. Hasegawa</i>   |     |
| <b>THE STUDY OF BORON-LINED HONEYCOMB NEUTRON DETECTOR WITH A MULTI-WIRE PROPORTIONAL CHAMBER READOUT .....</b>   | 746 |
| <i>Lixing Liu ; Yangyi Yu ; Zhujun Fang ; Chao Deng ; Zhi Zhang ; Yigang Yang</i>   |     |
| <b>EUROPIUM-DOPED GADOLINIUM OXIDE NANOPARTICLES MEDIATED RADIOPHARMACEUTICAL EXCITED FLUORESCENCE IMAGING .....</b>  | 749 |
| <i>Xiaojing Shi ; Zeyu Zhang ; Zhenhua Hu ; Jie Tian</i>  |     |
| <b>THE STUDY OF AN (E,N) REACTION BASED 4-DIMENSIONAL POINT NEUTRON SOURCE .....</b>  | 751 |
| <i>Yangyi Yu ; Yuqi Yang ; Zhi Zhang ; Yigang Yang</i>  |     |
| <b>STEREOTACTIC-RADIATION-THERAPY FIELD MONITORING USING SCINTILLATING WAVEGUIDES RIBBON TECHNOLOGY .....</b>   | 753 |
| <i>J. Esteves ; P. Pittet ; J. Ribouton ; P. Jalade ; J-M Galvan ; F. Blanc ; G. Haefeli ; P. Hopchev ; G-N Lu</i>  |     |
| <b>MICROHARDNESS STUDY OF CDZNTSE CRYSTALS FOR X-RAY AND GAMMA RAY RADIATION DETECTORS.....</b>   | 756 |
| <i>P. Moravec ; J. Franc ; V. Dedic ; P. Minárik ; H. Elhadidy ; V. Šíma ; R. Grill ; U. Roy</i>  |     |
| <b>DEVELOPMENT OF COMPACT GAMMA CAMERA USING SOC-FPGA BASED MODULARIZED DAQ.....</b>  | 760 |
| <i>Byeongjae Yu ; Seungbin Bae ; Cheol-Ha Baek ; Jung-Yeol Yeom ; Kisung Lee ; Hakjae Lee</i>   |     |
| <b>THE HIGH ENERGY PARTICLE DETECTOR FOR THE 2<sup>ND</sup> CHINESE SEISMO ELECTROMAGNETIC SATELLITE .....</b>  | 763 |
| <i>G. Masciantonio</i>  |     |
| <b>READOUT BOARD VALIDATION SETUP FOR THE ALICE TIME OF FLIGHT DETECTOR UPGRADE .....</b>   | 767 |
| <i>D. Falchieri ; P. Antonioli ; C. Baldanza ; M. Giacalone ; A. Mati</i>   |     |
| <b>ADVANCED SYSTEM IN FPGA FOR 3D (X, Y, T) IMAGING WITH CROSS DELAY-LINES .....</b>  | 770 |
| <i>N. Lusardi ; F. Garzetti ; N. Corna ; A. Reale ; A. Geraci ; E. Dobovicnik ; G. Cautero ; C. Dri ; R. Sergo ; L. Stebel</i>  |     |
| <b>SCA EXTENSION: A DESIGN FOR FPGA PARAMETER CONFIGURATION WITHIN THE ATLAS DAQ SCHEME .....</b>   | 774 |
| <i>Theodoros Alexopoulos ; Christos Bakalis ; Israel Grayzman ; Lorne Levinson ; Venetios Polychronakos</i>   |     |
| <b>FIRST IN-FLIGHT PERFORMANCES OF THE HIGH ENERGY PARTICLE DETECTOR ON BOARD CSES.....</b>   | 776 |
| <i>Cinzia De Donato ; Matteo Martucci ; Alessandro Sotgiu</i>   |     |

|  |     |
|--|-----|
| <b>SEM CHARACTERIZATION OF A SILICON DRIFT DETECTOR FOR ELECTRON SPECTROSCOPY .....</b>  | 782 |
| <i>Matteo Gugliatti ; Matteo Biassoni ; Stefano Pozzi ; Marco Carminati ; Pietro King ; Carlo Fiorini ; Maura Pavan ; Oliviero Cremonesi ; Peter Lechner ; Susanne Mertens</i> |     |
| <b>BLIND CT IMAGE QUALITY ASSESSMENT VIA DEEP LEARNING FRAMEWORK .....</b>   | 786 |
| <i>Qi Gao ; Sui Li ; Manman Zhu ; Danyang Li ; Zhaoying Bian ; Qingwen Lyu ; Dong Zeng ; Jianhua Ma</i>  |     |
| <b>AN ACCELERATED POSITRON EMISSION TOMOGRAPHY SIMULATOR .....</b>   | 790 |
| <i>Christos Lemesios ; Costas N. Papanicolas</i>   |     |
| <b>VERY HIGH-PERFORMANCE 24-CHANNELS TIME-TO-DIGITAL CONVERTER IN XILINX 20-NM KINTEX ULTRASCALE FPGA .....</b>  | 795 |
| <i>N. Lusardi ; F. Garzetti ; N. Corna ; R. De Marco ; A. Geraci</i>   |     |
| <b>SYNCHRONIZATION IN NETWORKS OF TIME-TO-DIGITAL CONVERTERS BASED ON FIELD PROGRAMMABLE GATE ARRAYS .....</b>   | 799 |
| <i>F. Garzetti ; N. Lusardi ; N. Corna ; A. Geraci</i>   |     |
| <b>ACCELERATION OF THE SCATTERING NOISE MODEL BASED IMAGE RECONSTRUCTION ALGORITHM FOR XFCT.....</b>   | 802 |
| <i>Siyuan Zhang ; Liang Li ; Zhiqiang Chen</i>   |     |
| <b>KERBEROS: A 48-CHANNEL ANALOG PROCESSING PLATFORM FOR SCALABLE READOUT OF LARGE SDD ARRAYS .....</b>  | 805 |
| <i>Pietro King ; Giuseppe Torrisi ; Matteo Gugliatti ; Marco Carminati ; Susanne Mertens ; Carlo Fiorini</i>   |     |
| <b>EVALUATION OF NEUTRON PULSE WIDTH IN LASER-DRIVEN NEUTRON SOURCE USING ORGANIC SCINTILLATOR.....</b>  | 808 |
| <i>H. Tanaka ; S. Kurosawa ; A. Yamaji ; S. Yamato ; R. Hanayama ; A. Sunahara ; T. Asahina ; H. Nagatomo ; K. Mima ; Y. Kato</i>  |     |
| <b>TIME-MODE ANALYSIS OF CROSSTALK INTERFERENCE IN A FPGA-BASED TDC IMPLEMENTATION .....</b>   | 810 |
| <i>S. Salgaro ; N. Corna ; F. Garzetti ; N. Lusardi ; A. Geraci</i>  |     |
| <b>DEAD-TIME CORRECTION METHOD FOR BLOCK DETECTOR BASED ULTRA-LONG AXIAL FOV PET SCANNER .....</b>   | 813 |
| <i>Yilin Liu ; Songsong Tang ; Jianxun Wang ; Yun Dong</i>   |     |
| <b>NOVEL GAMMA TRACKER FOR RAPID RADIATION DIRECTION DETECTION FOR UAV DRONE USE .....</b>   | 817 |
| <i>R. Pani ; F. Camera ; A. Pergola ; C. Polito ; R. Falconi ; G. Franciosini ; M. Longo ; M. Bettoli ; V. Frantellizzi ; G. De Vincentis ; A. Pani</i>                        |     |
| <b>EX-VIVO SPECT IMAGING STUDIES USING THE RISE RECONSTRUCTION METHOD .....</b>  | 820 |
| <i>Loizos Koutsantonis ; Penelope Bouziots ; Efstatios Stiliaris ; Costas N. Papanicolas</i>   |     |
| <b>DIRECT ENERGY-RESOLVING CT IMAGING VIA ENERGY-INTEGRATING CT IMAGES USING A UNIFIED GENERATIVE ADVERSARIAL NETWORK .....</b>  | 825 |
| <i>Lisha Yao ; Sui Li ; Ziquan Wei ; Yaohong Deng ; Manman Zhu ; Zhaoying Bian ; Jing Huang ; Qingwen Lyu ; Dong Zeng ; Jianhua Ma</i>   |     |
| <b>DEVELOPMENT OF MULTI-CHANNEL PROGRAMMABLE SIPM DRIVER BOARD .....</b>   | 828 |
| <i>Lishuang Ma ; Pengyu Chen ; Zhe Ning ; Zhigang Wang ; Sen Qian ; Yao Zhu ; Hao Guo ; Feng Gao ; Qi Wu ; Shuo Peng ; Lingfeng Zhang ; Zhile Wang ; Yinhong Zhang</i>         |     |
| <b>TOMOGRAPHIC RECONSTRUCTION FOR THE IAEA PGET DETECTOR: A COMPETITION ENTRY .....</b>  | 832 |
| <i>Luca Presotto</i>   |     |
| <b>MULTI-CHANNEL HIGH-RESOLUTION PULSE-WIDTH MODULATION IP-CORE IMPLEMENTATION FOR FPGA AND SOC DEVICE .....</b>   | 835 |
| <i>N. Corna ; N. Lusardi ; F. Garzetti ; A. Geraci ; M. Gustin</i>   |     |
| <b>COMPARISON OF RING ARTIFACTS REMOVAL BY USING NEURAL NETWORK IN DIFFERENT DOMAINS .....</b>   | 838 |
| <i>Wei Fang ; Liang Li</i>   |     |
| <b>MONTE CARLO SENSITIVITY STUDY OF A LONG AXIAL FOV PET SCANNER WITH PATIENT ADAPTIVE RINGS .....</b>   | 841 |
| <i>M. Abi Akl ; O. Bouhalil ; Y. Toufique ; Js. Karp ; S. Vandenberghe</i>   |     |
| <b>SENSROC13: A MIXED-SIGNAL BINARY-OUT FRONT-END READOUT ASIC WITH AUTOMATIC FEEDBACK RESET FOR CZT/SI-PIN DETECTORS .....</b>  | 844 |
| <i>Z. Li ; W. Gao ; Y. Yao ; B. Wang ; P. Huang ; Y. Xu ; Y. Hu</i>  |     |
| <b>COMPLETE SYSTEM-ON-CHIP LINUX-BASED PLATFORM FOR MEASUREMENT AND GENERATION OF TIME DOMAIN SIGNALS.....</b>   | 846 |
| <i>N. Corna ; F. Garzetti ; N. Lusardi ; A. Geraci</i>   |     |

|   |     |
|---|-----|
| <b>FEASIBILITY STUDY OF A COMPTON CAMERA FOR NUCLEAR CONTAMINATION SCENARIOS WITH VARYING THICKNESSES OF CONCRETE MATERIAL</b>  | 849 |
| <i>J. Platt ; A. Boston ; L. Harkness-Brennan ; H. Boston ; P. Nolan ; D. Judson ; E. Rintoul ; A. Caffery ; T. Woodroof ; J. Simpson ; I. Lazarus ; S. Kalantan ; C. Reid ; A. Newport ; H. Alshammary</i> |     |
| <b>NOVEL GAMMA TRACKER FOR RAPID RADIATION DIRECTION DETECTION FOR UAV DRONE USE</b>  | 852 |
| <i>R. Pani ; F. Camera ; A. Pergola ; C. Polito ; R. Falconi ; G. Franciosini ; M. Longo ; M. Bettoli ; V. Frantellizzi ; G. De Vincentis ; A. Pani</i>   |     |
| <b>SPECTROSCOPIC PERFORMANCE OF TERA: FAST MULTICHANNEL ANALOG PULSE PROCESSOR ASIC FOR X-RAY DETECTION APPLICATIONS</b>  | 855 |
| <i>Idham Hafizh ; Edoardo Fabbrica ; Marco Carminati ; Carlo Fiorini</i>  |     |
| <b>Pipeline-based real-time single event data sorter for coincidence detection</b>  | 859 |
| <i>Rendong Zhang ; Jingwei Yang ; Jingwu Yang ; Zhixiang Zhao ; Siwei Xie ; Qiu Huang ; Jianfeng Xu ; Qiyu Peng</i>   |     |
| <b>4D CBCT RECONSTRUCTION WITH TV REGULARIZATION ON A DYNAMIC SOFTWARE PHANTOM</b>  | 862 |
| <i>Rob Heylen ; Georg Schramm ; Paul Suetens ; Johan Nuyts</i>  |     |
| <b>CHARACTERIZATION OF PFM3, A 32×32 READOUT CHIP FOR PIXFEL X-RAY IMAGER</b>   | 865 |
| <i>M. Pezzoli ; L. Lodola ; M. Manghisoni ; F. Morsani ; L. Ratti ; V. Re ; E. Riceputi ; G. Traversi</i>   |     |
| <b>PET SCATTER CORRECTION USING MACHINE LEARNING TECHNIQUES</b>   | 870 |
| <i>Joan Prats ; Andrés Larroza ; Sandra Oliver ; María J. Rodríguez-Álvarez</i>   |     |
| <b>STUDY OF TIME CHARACTERISTIC TEST METHOD OF THE FAST TIMING MCP-PMT</b>  | 873 |
| <i>Yao Zhu ; Sen Qian ; Zhigang Wang ; Zhe Ning ; Yang Wang ; Qi Wu ; Haitao Li ; Lishuang Ma ; Pengyu Chen ; Feng Gao ; Qianyu Hu ; Hao Guo ; Shuo Peng ; Zhile Wang</i>                                   |     |
| <b>EFFECT OF TOTAL VARIATION REGULARIZATION IN BONE SPECT RECONSTRUCTION FROM A SMALL NUMBER OF PROJECTIONS</b>   | 877 |
| <i>Michikazu Kanazawa ; Tenta Sasaya ; Shota Hosokawa ; Hiroshi Watabe ; Tetsuya Yuasa ; Yasuyuki Takahashi ; Tsutomu Zeniya</i>  |     |
| <b>HIGH RESOLUTION ELECTRONICS FOR A POSITION SENSITIVE MCP DELAY-LINE DETECTOR</b>   | 880 |
| <i>Wenhai Dong ; Changqing Feng ; Yufeng Shi ; Xiaolin Song ; Shubin Liu</i>  |     |
| <b>IDENTIFYING DEMYELINATING AND ISCHEMIA BRAIN DISEASES THROUGH MAGNETIC RESONANCE IMAGES PROCESSING</b>   | 884 |
| <i>Darwin P. Castillo ; René J. Samaniego ; Yuliana Jiménez ; Luis A. Cuenca ; Oscar A. Vivanco ; Juán M. Álvarez-Gómez ; María J. Rodríguez-Álvarez</i>  |     |
| <b>A SEMICONDUCTOR TRIPLE-LAYERED COMPTON CAMERA FOR PROTON THERAPY VERIFICATION</b>  | 887 |
| <i>S. Kalantan ; A. Boston ; L. Harkness-Brennan ; P. Nolan ; D. Judson ; C. Unsworth ; A. Caffery ; E. Rintoul ; J. Platt ; A. Newport ; H. Alshammary</i>   |     |
| <b>POSITION ENCODING READOUT ELECTRONICS OF LARGE AREA MICROMEGAS DETECTORS AIMING FOR COSMIC RAY MUON IMAGING</b>  | 890 |
| <i>Jiang Pan ; Changqing Feng ; Zhiyong Zhang ; Yu Wang ; Haolei Chen ; Jiaqi Wang ; Yichao Wang ; Junchen Wang ; Danyang Zhu ; Jianxin Feng ; Shubin Liu</i>   |     |
| <b>INVESTIGATION OF OPTICAL PROPERTY MODULATION BASED IONIZING RADIATION DETECTION METHOD FOR PET: TWO-CROSSED-POLARIZERS BASED METHOD</b>  | 895 |
| <i>Yuli Wang ; Li Tao ; Craig S. Levin ; Jianfeng Xu</i>  |     |
| <b>INTEGRATION OF PROTON COMPUTED TOMOGRAPHY INTO THE OPEN SOURCE SOFTWARE STIR</b>   | 898 |
| <i>Margarita Panagiotidou ; Philip Evans ; Nikolaos Dikaios</i>   |     |
| <b>MAXIMUM LIKELIHOOD ESTIMATION OF THE GEOMETRIC SENSITIVITIES IN PET</b>  | 904 |
| <i>Ahmadreza Rezaei ; Timothy Deller ; Kristen Wangerin ; Georg Schramm ; Floris Jansen ; Koen Van Laere ; Johan Nuyts</i>  |     |
| <b>IMAGE QUALITY ASSESSMENT FOR AWAKE ANIMAL BRAIN PET</b>  | 906 |
| <i>Simone Beer ; Alan Miranda ; David Elmenhorst ; Tina Kroll ; Jeroen Verhaeghe ; Andreas Bauer</i>  |     |
| <b>CHARACTERISTICS AND PERFORMANCE OF RD53A READOUT CHIP WITH SMALL-PIXEL SILICON SENSORS</b>   | 909 |
| <i>Aliakbar Ebrahimi</i>  |     |
| <b>TEACHER-STUDENT NETWORK FOR CT IMAGE RECONSTRUCTION VIA META-LEARNING STRATEGY</b>   | 914 |
| <i>Manman Zhu ; Sui Li ; Danyang Li ; Qi Gao ; Zhaoying Bian ; Jing Huang ; Dong Zeng ; Jianhua Ma</i>  |     |
| <b>DEVELOPMENT OF FRONTEND ELECTRONICS FOR HYPER-KAMIOKANDE EXPERIMENT</b>  | 917 |
| <i>Youzuke Kataoka ; Yoshinari Hayato ; Yasuhiro Takemoto ; Shota Izumiya</i>   |     |

|   |     |
|---|-----|
| <b>TASK-DRIVEN DEEP LEARNING NETWORK FOR DYNAMIC CEREBRAL PERFUSION COMPUTED TOMOGRAPHY PROTOCOL DETERMINATION</b>  | 919 |
| <i>Sui Li ; Manman Zhu ; Danyang Li ; Qi Gao ; Zhaoying Bian ; Dong Zeng ; Jianhua Ma</i>   |     |
| <b>DEVELOPMENT OF GAMMA-RAY BURST POLARIMETER GAP2</b>  | 922 |
| <i>Y. Saito ; S. Gunji ; T. Mihara ; D. Yonetoku ; T. Sawano</i>  |     |
| <b>CHARACTERIZATION OF AMORPHOUS SILICON BASED MICROCHANNEL PLATES WITH HIGH ASPECT RATIO</b>   | 925 |
| <i>S. Frey ; J. Löffler ; C. Ballif ; N. Wyrtsch</i>  |     |
| <b>TASK-ORIENTED DEEP NETWORK FOR ISCHEMIC STROKE SEGMENTATION IN UNENHANCED CT IMAGING</b>   | 930 |
| <i>Lei Wang ; Sui Li ; Mingqiang Meng ; Gaofeng Chen ; Manman Zhu ; Zhaoying Bian ; Qingwen Lyu ; Dong Zeng ; Jianhua Ma</i>  |     |
| <b>EFFECT OF IMAGE NOISE ON REGISTRATION IN PET BRAIN IMAGING</b>   | 933 |
| <i>Matthew G. Spangler-Bickell ; Timothy Deller ; Samuel A. Hurley ; Alan B. McMillan ; Valentino Bettinardi ; Floris Jansen</i>  |     |
| <b>SYSTEM DEVELOPMENT AND CHALLENGES FOR DELAYED GAMMA-RAY NONDESTRUCTIVE ASSAY IN SAFEGUARD VERIFICATION OF NUCLEAR MATERIAL</b>   | 936 |
| <i>F. Rossi ; D. C. Rodriguez ; M. Seya ; T. Takahashi ; M. Koizumi ; K. Abbas ; J. M. Crochemore ; B. Pedersen ; T. Bogucarska ; G. Varasano ; P. Schillebeeckx ; S. Kopecky ; G. Žerovník ; S. Oberstedt</i>  |     |
| <b>OPERATIONAL EXPERIENCE AND PERFORMANCE WITH THE ATLAS PIXEL DETECTOR AT THE LARGE HADRON COLLIDER</b>  | 938 |
| <i>Gabriele Balbi</i>   |     |
| <b>SIMULATION STUDIES OF AN ASYMMETRIC NEW TIME-OF-FLIGHT PET PROTOTYPE</b>   | 942 |
| <i>Ole Brandt</i>   |     |
| <b>A SUMMING TREE STRUCTURAL MOTION CORRECTION ALGORITHM FOR BRAIN PET IMAGES USING 3D TO 2D PROJECTION</b>   | 947 |
| <i>I. Hong ; Z. Burbar ; P. Schleyer</i>  |     |
| <b>SPATIALLY VARIANT POINT SPREAD FUNCTION FOR PET RIGID MOTION CORRECTION</b>  | 950 |
| <i>Alan Miranda ; Sigrid Stroobants ; Steven Staelsens ; Jeroen Verhaeghe</i>   |     |
| <b>32-CHANNEL DETECTION UNIT FOR COMBINED XRF-XRD IN MINING TRANSPORTABLE APPLICATIONS</b>  | 953 |
| <i>M. Carminati ; A. Amirkhani ; M. Gugliatti ; E. Ferrara ; C. Fiorini ; E. Demenev ; G. Pepponi ; S. Ronchin ; F. Ficarella ; G. Borghi ; N. Zorzi ; E. Borovin ; L. Lutterotti</i>   |     |
| <b>PROCESSING OF COMPTON EVENTS IN THE PETALO READOUT SYSTEM</b>  | 956 |
| <i>J. Renner ; J. M. Benilloch-Rodríguez ; J. V. Carrión ; R. Gadea ; V. Herrero-Bosch ; M. Kekic ; C. Romo-Luque ; P. Ferrario ; J. J. Gómez-Cadenas</i>   |     |
| <b>CHARACTERIZATION OF THE INTEL REALSENSE D415 STEREO DEPTH CAMERA FOR MOTION-CORRECTED CT IMAGING</b>   | 963 |
| <i>M. Dashbani Moghari ; P. Noonan ; D. Lewis Henry ; R. Fulton ; N. Young ; K. Moore ; A. Kyme</i>   |     |
| <b>THE ALIGNMENT OF THE LHCb VERTEX DETECTOR: PERFORMANCE IN RUN 2 AND STUDIES FOR THE UPGRADE</b>  | 966 |
| <i>Biljana Mitreska</i>   |     |
| <b>A METHOD TO ESTIMATE MOTION FRAMES FROM PET LISTMODE BY MERGING ADJACENT CLUSTERS</b>  | 971 |
| <i>I. Hong ; Z. Burbar ; P. Schleyer</i>  |     |
| <b>THE DIGITAL-ANALOG SiPM APPROACH: A STORY OF ELECTRONIC AND EXCESS NOISE</b>   | 973 |
| <i>Savannah M. Decker ; Marco Pizzichemi ; Andrea Polesel ; Marco Paganoni ; Etienne Auffray ; Stefan Gundacker</i>   |     |
| <b>TOWARDS EFFICIENCY AND COUNT-RATE ENHANCEMENT OF X-RAY ARDESIA SPECTROMETER</b>  | 978 |
| <i>G. Utica ; M. Gugliatti ; M. Carminati ; E. Fabbrica ; I. Hafizh ; A. Balerna ; G. Borghi ; F. Ficarella ; A. Picciotto ; N. Zorzi ; A. Capsoni ; S. Coelli ; A. Tocchio ; E. Welter ; C. Fiorini</i>  |     |
| <b>THE PENETRATING PARTICLE ANALYZER (PAN) INSTRUMENT FOR MEASUREMENTS OF LOW ENERGY COSMIC RAYS</b>  | 982 |
| <i>Giovanni Ambrosi ; Philipp Azzarello ; Benedikt Bergmann ; Bruna Bertucci ; Franck Cadoux ; Matteo Duranti ; Maria Ionica ; Merlin Kole ; Mercedes Paniccia ; Christina Plainaki ; Stanislav Pospisil ; Pierre Alexandre Thonet ; Nicola Tomassetti ; Andrii Tykhonov ; Valerio Vagelli ; Xin Wu</i> |     |
| <b>PASSIVATED SDD-BASED DETECTION UNIT TO IMPROVE RELIABILITY IN SCINTILLATION DETECTION</b>  | 990 |
| <i>L. Buonanno ; M. Carminati ; C. Fiorini ; P. King ; G. Borghi ; N. Furlan ; N. Zorzi ; L. Gironi</i>   |     |

|  |      |
|--|------|
| <b>OPTIMIZATION OF A CUSTOMIZED SIMULTANEOUS ALGEBRAIC RECONSTRUCTION TECHNIQUE ALGORITHM FOR BREAST CT</b>  | 993  |
| <i>Sandro Donato ; Luca Brombal ; Fulvia Arfelli ; Viviana Fanti ; Renata Longo ; Piernicola Oliva ; Luigi Rigon ; Bruno Golosio</i>   |      |
| <b>ESTIMATION OF FULL-DOSE 4D CT PERfusion IMAGES FROM LOW-DOSE IMAGES USING CONDITIONAL GENERATIVE ADVERSARIAL NETWORKS</b>   | 995  |
| <i>M. Dashtbani Moghari ; L. Zhou ; B. Yu ; K. Moore ; N. Young ; R. Fulton ; A. Kyme</i>  |      |
| <b>LEARNING-BASED CT PERfusion IMAGE DENOISING WITH ONLY NOISY TRAINING DATA</b>   | 998  |
| <i>Dufan Wu ; Hui Ren ; Quanzheng Li</i>   |      |
| <b>BLACK SILICON PHOTODIODES FOR VUV DETECTION</b>   | 1001 |
| <i>T. Tsang ; A. Bolotnikov ; A. Haarahiltunen ; J. Heinonen</i>   |      |
| <b>MASS PRESERVATION FOR RESPIRATORY MOTION REGISTRATION IN BOTH PET AND CT</b>  | 1003 |
| <i>Elise C. Emond ; Alexandre Bousse ; Ludovica Brusaferrri ; Ashley M. Groves ; Brian F. Hutton ; Kris Thielemans</i>   |      |
| <b>ANALOG FRONT-END DESIGN PERSPECTIVE OF A 14 NM FINFET TECHNOLOGY</b>  | 1007 |
| <i>L. Ratti ; M. Manghisoni ; V. Re</i>  |      |
| <b>THE NAPOLI-VARNA-DAVIS PROJECT FOR VIRTUAL CLINICAL TRIALS IN X-RAY BREAST IMAGING</b>  | 1010 |
| <i>Giovanni Mettivier ; Antonio Sarno ; Francesca Di Franco ; Kristina Bliznakova ; Zhivko Bliznakov ; Andrew M. Hernandez ; John M. Boone ; Paolo Russo</i>                   |      |
| <b>GAUSSINO - A GAUDI-BASED CORE SIMULATION FRAMEWORK</b>  | 1015 |
| <i>B. G. Siddi ; D. Müller</i>   |      |
| <b>RESPIRATORY MOTION CORRECTION IN DYNAMIC PET WITH A SINGLE ATTENUATION MAP</b>  | 1019 |
| <i>Elise C. Emond ; Alexandre Bousse ; Maria Machado ; Joanna Porter ; Kjell Erlandsson ; Ashley M. Groves ; Brian F. Hutton ; Kris Thielemans</i>                             |      |
| <b>GAMMA-RAY IMAGING USING CHERENKOV CONE DETECTION FROM ENERGETIC COMPTON ELECTRONS</b>   | 1022 |
| <i>Reimund Bayerlein ; Ivor Fleck ; Todd E. Peterson ; Hedia Becker</i>  |      |
| <b>FAST NEUTRON DETECTION WITH VARYING-LENGTH TRANS-STILBENE SCINTILLATORS</b>   | 1025 |
| <i>Shaun D. Clarke ; Mark M. Bourne ; Sara A. Pozzi</i>  |      |
| <b>EVALUATION OF 3D PRINTABLE RUBBER-ELASTOMERIC POLYMER AS PHANTOM MATERIAL FOR HYBRID PET/MRI</b>  | 1028 |
| <i>Lotfi Talalwa ; Ali Gordji-Nejad ; Ghaleb Natour ; Alexander Drzezga ; Andreas Bauer ; Simone Beer</i>  |      |
| <b>USING 3D-SCENE DATA FROM A MOBILE DETECTOR SYSTEM TO MODEL GAMMA-RAY BACKGROUNDS</b>  | 1031 |
| <i>Marco Salathe ; Mark S. Bandstra ; Brian J. Quiter ; Joseph C. Curtis</i>   |      |
| <b>DEVELOPMENT OF AN OPTIMIZED CONVERTER LAYER FOR A SILICON-CARBIDE-BASED NEUTRON SENSOR FOR THE DETECTION OF FISSIONABLE MATERIALS</b>                                       | 1035 |
| <i>Stephen D. Monk ; Simon P. Platt ; Michael J. Anderson ; David Cheneler ; Mustafa Alhamdi</i>   |      |
| <b>NOISE TO NOISE ENSEMBLE LEARNING FOR PET IMAGE DENOISING</b>  | 1042 |
| <i>Chung Chan ; Jian Zhou ; Li Yang ; Wenyuan Qi ; Evren Asma</i>  |      |
| <b>XSPECTRA®: AN ADVANCED REAL-TIME FOOD CONTAMINANTS DETECTOR</b>   | 1045 |
| <i>B. Garavelli ; P. Pozzi ; D. Macera ; L. Zanotti ; A. Mencarelli ; G. Bubba ; P. Bertoni ; M. Sammartini ; M. Bettelli ; G. Bertuccio ; G. Ghiringhelli ; A. Zappettini</i> |      |
| <b>DESIGN AND DEVELOPMENT OF A 3D POSITION-SENSITIVE DETECTOR FOR <math>4\pi</math> VIEW GAMMA IMAGER BASED ON DUAL-ENDED READOUT TECHNIQUE</b>                                | 1048 |
| <i>Peng Fan ; Zhenlei Lyu ; Tianpeng Xu ; Yifan Hu ; Qingyang Wei ; Chenglin Zhu ; Lixiang Jiang ; Yan Xia ; Yaqiang Liu ; Tianyu Ma</i>                                       |      |
| <b>A SIPM-BASED CLINICAL MRI-COMPATIBLE SPECT INSERT</b>   | 1052 |
| <i>M. Carminati ; I. D'Adda ; A. J. Morahan ; K. Erlandsson ; K. Nagy ; Z. Nyitrai ; M. Czeller ; R. Moresco ; A. Savi ; P. Van Mullekom ; B. F. Hutton ; C. Fiorini</i>       |      |
| <b>EVALUATION OF COUNT-LEVEL ADAPTIVE IMAGE DOMAIN PSF FOR PET IMAGE RECONSTRUCTION</b>  | 1055 |
| <i>Li Yang ; Wenyuan Qi ; Chung Chan ; Evren Asma</i>  |      |
| <b>THE ATLAS STRIP DETECTOR SYSTEM FOR THE HIGH LUMINOSITY LHC</b>   | 1058 |
| <i>Jan-Hendrik Arling</i>  |      |
| <b>STUDY OF CHARACTERISTICS OF CE-DOPED <math>\text{GD}_3\text{AL}_2\text{Ga}_3\text{O}_{12}</math> SCINTILLATOR</b>   | 1064 |
| <i>Yao Zhu ; Zhigang Wang ; Sen Qian ; Hao Guo ; Pengyu Chen ; Lishuang Ma ; Qi Wu ; Shuo Peng ; Lingfeng Zhang ; Zhile Wang</i>   |      |

|   |      |
|---|------|
| <b>DIAMOND SCATTERING DETECTORS FOR COMPTON TELESCOPES .....</b>  | 1068 |
| <i>Peter F. Bloser ; Keiichi Ogasawara ; John A. Trevino ; Jason S. Legere ; James M. Ryan ; Mark L. McConnell</i>  |      |
| <b>THREE-DIMENSIONAL SHAPE COMPLETION USING DEEP CONVOLUTIONAL NEURAL NETWORKS: APPLICATION TO TRUNCATION COMPENSATION AND METAL ARTIFACT REDUCTION IN PET/MRI ATTENUATION CORRECTION .....</b>   | 1071 |
| <i>Hossein Arabi ; Habib Zaidi</i>  |      |
| <b>BEAM TEST MEASUREMENTS ON PLANAR PIXEL SENSORS FOR THE CMS PHASE 2 UPGRADE .....</b>   | 1074 |
| <i>Finn Feindt</i>  |      |
| <b>SIPMS FOR DIRECT SCINTILLATION LIGHT DETECTION IN NOBLE LIQUIDS .....</b>  | 1081 |
| <i>T. Tsang</i>   |      |
| <b>A HIGH PRESSURE TPC WITH OPTICAL READOUT .....</b>   | 1084 |
| <i>A. V. Waldron ; A. Deisting</i>  |      |
| <b>PENELOPET V3.0, AN IMPROVED MULTIPLATFORM PET SIMULATOR.....</b>   | 1086 |
| <i>Alejandro Lopez-Montes ; Joaquin L. Herraiz ; Pablo Galve ; Samuel Espa a ; Esther Vicente ; Jacobo Cal-Gonzalez ; Jose Manuel Udi as</i>  |      |
| <b>THE STATISTICAL INFLUENCE OF IMAGING TIME AND SEGMENTATION VOLUME ON PET RADIOMIC FEATURES: A PRECLINICAL STUDY .....</b>  | 1089 |
| <i>Emad M. Alsayed ; Rhodri Smith ; Christopher Marshall ; Stephen Paisey ; Emiliano Spezi</i>  |      |
| <b>SEL-ORIENTED RAD-HARD STRATEGY AND CHARACTERIZATION OF THE XCR4C ASIC FOR X-RAY CCD APPLICATIONS.....</b>  | 1093 |
| <i>Bo Lu ; Jia Huo ; Yong Chen ; Wei Wei ; Bo Li ; Jiantou Gao ; Chunlin Wang ; Hainan Liu ; Yumei Zhou</i>   |      |
| <b>OPTIMAL DESIGN OF SINGLE-PHOTON SENSOR FRONT-END ELECTRONICS FOR FAST-TIMING APPLICATIONS .....</b>  | 1097 |
| <i>J. M. Fern  ndez-Tenllado ; R. Ballabriga ; M. Campbell ; D. Gasc n ; S. G  mez ; J. Mauricio</i>  |      |
| <b>ACQUISITION CORRECTION AND RECONSTRUCTION FOR A CLINICAL SPECT/MRI INSERT .....</b>  | 1102 |
| <i>Ashley J. Morahan ; Kjell Erlandsson ; Ilenia D'Adda ; Marco Carminati ; Annarita Savi ; Rosa-Maria Moresco ; Kalman Nagy ; Zoltan Nyitrai ; Botond Tolgyesi ; Debora Salvado ; Pieter Van Mullekom ; Carlo E. Fiorini ; Brian F. Hutton</i> |      |
| <b>CHARACTERIZATION OF CDMNTE PLANAR NUCLEAR DETECTORS GROWN BY VERTICAL BRIDGMAN TECHNIQUE.....</b>  | 1105 |
| <i>Stephen U. Egarievwe ; Utpal N. Roy ; Ezekiel O. Agbalagba ; Keiandrea L. Dunning ; Oghaghare K. Okobiah ; Mordecai B. Israel ; Mebougna L. Drabo ; Ralph B. James</i>   |      |
| <b>PROTON COMPUTED TOMOGRAPHY: A CASE STUDY FOR OPTIMAL DATA ACQUISITION .....</b>  | 1108 |
| <i>M Panagiotidou ; Ca Collins-Fekete ; P Evans ; N Dikaios</i>   |      |
| <b>DEVELOPMENT OF A ZNS (AG)-SILICON PHOTOMULTIPLIER FAST NEUTRON DETECTOR FOR THE NEUTRON HODOSCOPE AT TREAT .....</b>   | 1114 |
| <i>Marc A. Wonders ; David L. Chichester ; Marek Flaska</i>   |      |
| <b>MOTION COMPENSATION IN DUAL ENERGY X-RAY IMAGING BASED ON DEFORMABLE IMAGE REGISTRATION .....</b>  | 1120 |
| <i>P. Palaniappan ; P. Steininger ; I. M. Messner ; H. Deutschmann ; K. Parodi ; G. Landry ; M. Riboldi</i>   |      |
| <b>MONTE CARLO SIMULATION OF DEAD TIME IN FLUORESCENCE DETECTORS AND ITS DEPENDENCE ON BEAM STRUCTURE.....</b>  | 1122 |
| <i>S. Chatterji ; G. Dennis ; W. I. Helsby ; N. Tartoni</i>   |      |
| <b>A HIGH DYNAMIC RANGE 144-SIPM DETECTION MODULE FOR GAMMA SPECTROSCOPY AND IMAGING WITH 3" LABR<sub>3</sub> .....</b>   | 1127 |
| <i>D. Di Vita ; L. Buonanno ; G. L. Montagnani ; A. Minerva ; A. Giannoni ; M. Carminati ; F. Camera ; C. Fiorini</i>   |      |
| <b>IMPROVING THE CHERENKOV BASED PET PERFORMANCE USING MULTI-LAYER DETECTORS.....</b>   | 1130 |
| <i>D. Consuegra ; R. Dolenc ; S. Korpar ; P. Kri  an ; R. Pestotnik</i>   |      |
| <b>IMAGE RECONSTRUCTION USING TOF BACK PROJECTION AND A DEBLURRING NEURAL NETWORK .....</b>   | 1135 |
| <i>William Whiteley ; Vladimir Panin ; Deepak Bharkhada</i>   |      |
| <b>STUDY OF THE COINCIDENCE TIME RESOLUTION OF NEW PEROVSKITE BULK CRYSTALS .....</b>   | 1137 |
| <i>Li Tao ; Yihui He ; Mercouri G. Kanatzidis ; Craig S. Levin</i>  |      |
| <b>OPTIMAL TIME OF SINGLE STATIC PET SCAN TO DETERMINE TUMOR HYPOXIA WITH <sup>18</sup>F-FMISO IN GLIOBLASTOMA .....</b>  | 1140 |
| <i>Redha-Alla Abdo ; Fr  d  ric Lamare ; Philippe Fernandez ; M'Hamed Bentourkia</i>  |      |
| <b>EFFICIENT NEURAL NETWORK IMAGE RECONSTRUCTION FROM RAW DATA USING A RADON INVERSION LAYER .....</b>  | 1144 |
| <i>William Whiteley ; Jens Gregor</i>   |      |

|   |      |
|---|------|
| <b>GAMMA: A HIGH DYNAMIC RANGE 16-CH ASIC FOR LARGE SCINTILLATORS READOUT WITH SIPM ARRAY.....</b>  | 1146 |
| <i>L. Buonanno ; G. L. Montagnani ; D. Di Vita ; F. Castelli ; M. Carminati ; C. Fiorini</i>  |      |
| <b>PARAMETERS ESTIMATION DIRECTLY FROM SINOGRAMS WITH NEURAL NETWORKS .....</b>   | 1149 |
| <i>Haoran Chang ; Debasis Mitra ; Uttam Shrestha ; Grant T. Gullberg ; Youngho Seo</i>  |      |
| <b>CHARACTERIZATION OF TOF-PET DETECTORS FOR A SECOND GENERATION RADIOFREQUENCY-PENETRABLE PET INSERT FOR SIMULTANEOUS PET/MRI .....</b>  | 1154 |
| <i>Qian Dong ; Brian J. Lee ; Chen-Ming Chang ; Ilaria Sacco ; Ronald D. Watkins ; Peter Fischer ; Emily Anaya ; Craig S. Levin</i>   |      |
| <b>KLAUS: A LOW-POWER SIPM READOUT ASIC FOR HIGHLY GRANULAR CALORIMETERS.....</b>   | 1157 |
| <i>Zhenxiong Yuan ; Konrad Briggel ; Huangshan Chen ; Yonathan Munwes ; Hans-Christian Schultz-Coulon ; Wei Shen</i>  |      |
| <b>3D SPATIAL RESOLUTION PROPERTIES OF MOLECUBES B-CUBE: CHARACTERIZATION WITH DIFFERENT ISOTOPES .....</b>   | 1161 |
| <i>Luca Presotto ; Matthew Spangler-Bickell ; Sara Belloli ; Rosa M. Moresco ; Maria Picchio ; Maria C. Gilardi ; L. Gianolli ; Valentino Bettinardi</i>  |      |
| <b>DEVELOPMENT OF A 3D CZT SPECTROMETER SYSTEM WITH DIGITAL READOUT FOR HARD X/GAMMA-RAY ASTRONOMY .....</b>  | 1163 |
| <i>Ezio Caroli ; Silvia Zanettini ; Leonardo Abbene ; Natalia Auricchio ; Giacomo Benassi ; Antonino Buttacavoli ; Nicola Sarzi Amadé ; Stefano Del Sordo ; Fabio Principato ; Nicoletta Protti ; Giuseppe Sottile ; John B. Stephen ; Nicola Zambelli ; Andrea Zappettini</i>  |      |
| <b>HIGH ENERGY RESOLUTION INORGANIC SCINTILLATORS READ BY SIPM ARRAYS .....</b>   | 1167 |
| <i>Miguel Garcia-Diez ; Victor Sanchez-Tembleque ; Luis Mario Fraile ; Jose Manuel Urdas</i>  |      |
| <b>PASSIVE GATING GRID FOR ION BACK FLOW SUPPRESSION IN HIGH LUMINOSITY COLLIDER EXPERIMENTS .....</b>  | 1170 |
| <i>K. Dehmelt ; P. Garg ; T. K. Hemmick ; A. Milov ; E. Shulga ; V. Zakharov</i>  |      |
| <b>EVALUATION OF HIGH-SENSITIVITY ORGAN-SPECIFIC POSITRON EMISSION TOMOGRAPHY (PET) SYSTEM .....</b>  | 1173 |
| <i>Justin Stiles ; Oleksandr Bubon ; Harutyun Poladyan ; Aram Teymurazyan ; And Alla Reznik.</i>  |      |
| <b>QUALIFICATION OF THE SEVEN DEMENTIAS PLATFORM UK PET-MR SCANNERS FOR MULTICENTRE TRIALS .....</b>  | 1176 |
| <i>Georgios Krokos ; Jane Mackewn ; Lucy Pike ; William Hallett ; Paweł Markiewicz ; Anna Barnes ; Marilena Rega ; Tim D. Fryer ; Roido Manavaki ; Jose M. Anton-Rodriguez ; Elizabeth Howell ; Catriona Wimberley ; Tim Clark ; Gillian Macnaught ; Paul Marsden ; Julian C. Matthews</i>  |      |
| <b>LOW-DOSE DUAL ENERGY CT IMAGE RECONSTRUCTION USING NON-LOCAL DEEP IMAGE PRIOR .....</b>  | 1179 |
| <i>Kuang Gong ; Kyungsang Kim ; Dufan Wu ; Mannudeep K. Kalra ; Quanzheng Li</i>  |      |
| <b>PERFORMANCE OF AN IDEAL ATTENUATION AND SCATTER CORRECTION STRATEGY FOR A NEXT-GENERATION SPECT SYSTEM DEDICATED TO QUANTITATIVE CLINICAL BRAIN IMAGING.....</b>   | 1181 |
| <i>Benjamin Auer ; Jan De Beenhouwer ; Navid Zeraatkar ; Phillip H. Kuo ; Lars R. Furenlid ; Michael A. King</i>  |      |
| <b>SPATIAL MODULATION FOR <math>L_1</math> PENALTY TERMS IN EMISSION TOMOGRAPHY .....</b>   | 1184 |
| <i>Luca Presotto ; Valentino Bettinardi</i>   |      |
| <b>COMPENSATION OF HEAD MOTION IN ADAPTISPECT-C USING A GPU-BASED ITERATIVE RECONSTRUCTION ALGORITHM: INITIAL RESULTS .....</b>   | 1186 |
| <i>Navid Zeraatkar ; Clifford Lindsay ; Benjamin Auer ; Lars R. Furenlid ; Phillip H. Kuo ; Michael A. King</i>   |      |
| <b>CALIBRATION AND DATA CONSISTENCY IN PARALLEL AND FAN-BEAM LINOGRAM GEOMETRIES .....</b>  | 1189 |
| <i>Laurent Desbat ; Rolf Clackdoyle</i>   |      |
| <b>DYNAMIC TOMOGRAPHIC RECONSTRUCTION OF HEPATOBILIARY SCINTIGRAPHY FROM DYNAMIC PLANAR IMAGING FOLLOWED BY SPECT .....</b>   | 1194 |
| <i>Luca Presotto ; Annarita Savi</i>  |      |
| <b>CHARACTERIZATION OF A LARGE VOLUME CADMIUM ZINC TELLURIDE PRECLINICAL PET SYSTEM .....</b>   | 1196 |
| <i>A. Groll ; C. S. Levin</i>   |      |
| <b>TESTS OF ECO-FRIENDLY GAS MIXTURES IN GEM BASED DETECTORS WITH OPTICAL READOUT .....</b>   | 1199 |
| <i>I. Abritta Costa ; E. Baracchini ; R. Bedogni ; F. Bellini ; L. Benussi ; S. Bianco ; M. Caponero ; G. Cavoto ; E. Di Marco ; G D'Imperio ; F. Iacoangeli ; G. Maccarone ; M. Marafini ; G. Mazzitelli ; A. Messina ; L. Passamonti ; F. Petrucci ; D. Piccolo ; D. Pierluigi ; D. Pinci ; F. Renga ; A. Russo ; G. Saviano ; S. Tomassini</i> |      |
| <b>DENOISING AND DA RELEASE: APPLICATION OF THE 4D DENOISED RECONSTRUCTION HYPR4D-K-OSEM.....</b>   | 1203 |
| <i>Connor W. J. Bevington ; Ju-Chieh Kevin Cheng ; Vesna Sossi</i>  |      |

|  |      |
|--|------|
| <b>ACCELERATED RESOLUTION RECOVERY IMAGE RECONSTRUCTION USING A NEURAL NETWORK LEAPFROGGING .....</b>  | 1206 |
| <i>Xiang Zhang ; Deepak Bharkhada ; Vladimir Panin ; William Whiteley ; Samuel Clark ; Dipen Dave ; Jorge Cabello</i>  |      |
| <b>MONTE CARLO SIMULATION STUDY OF ANNIHILATION GAMMA YIELD FROM C-11 AND C-12 IRRADIATION IN WATER AND PMMA PHANTOMS .....</b>  | 1209 |
| <i>Ananta Raj Chalise ; Yujie Chi ; Youfang Lai ; Yiping Shao ; Mingwu Jin</i>   |      |
| <b>CHARACTERIZATION OF A FAST-FRAMING X-RAY CAMERA WITH WIDE DYNAMIC RANGE FOR HIGH-ENERGY IMAGING .....</b>   | 1212 |
| <i>Katherine S. Shanks ; Hugh T. Philipp ; John T. Weizerick ; Michael Hammer ; Mark W. Tate ; Prafull Purohit ; Antonino Miceli ; Sol M. Gruner</i>   |      |
| <b>FABRICATION AND TESTING OF AC-COUPLED LOW-GAIN AVALANCHE DIODES AT BNL.....</b>   | 1214 |
| <i>Gabriele Giacomini ; Wei Chen ; Gabriele D'Amen ; Luigi Lavitola ; Alessandro Tricoli</i>   |      |
| <b>THE DESIGN AND CONSTRUCTION OF LHCb VELO UPGRADE MODULES.....</b>   | 1217 |
| <i>Peter Svihra</i>  |      |
| <b>STUDIES AND VALIDATION OF A CMS DRIFT TUBE TRIGGER ALGORITHM FOR HL-LHC .....</b>   | 1223 |
| <i>C. A. Carrillo</i>  |      |
| <b>DEVELOPMENT OF WATER SCINTILLATOR FOR A FUTURE LARGE-SCALE NEUTRINO EXPERIMENT .....</b>  | 1226 |
| <i>Takashi Iida ; Yoshiaki Kibe ; Yukishige Kondo</i>  |      |
| <b>A SILICON MICROCHANNEL BI-PHASE CO<sub>2</sub> COOLING FOR LHCb .....</b>   | 1229 |
| <i>A. Bitadze ; K. Akiba</i>   |      |
| <b>DESIGN OF A HIGHLY SELECTIVE MUON TRIGGER SYSTEM FOR FUTURE HADRON COLLIDER EXPERIMENTS .....</b>   | 1234 |
| <i>D. Cieri ; S. Abovyan ; V. Danielyan ; M. Fras ; O. Kortner ; S. Kortner ; H. Kroha ; S. Nowak ; R. Richter</i>   |      |
| <b>NEUTRON DETECTION WITH FAST-TIMING LGAD .....</b>   | 1239 |
| <i>Gabriele D'Amen ; Wei Chen ; Gabriele Giacomini ; Sneha Ramshanker ; Alessandro Tricoli</i>   |      |
| <b>MACHINE LEARNING APPLICATIONS FOR THE DETECTION OF MISSING RADIOACTIVE SOURCES .....</b>  | 1243 |
| <i>Matthew Durbin ; Austin Kuntz ; Azaree Lintereur</i>  |      |
| <b>EFFECTS OF TOF RESOLUTION MODELS ON EDGE ARTIFACTS IN PET RECONSTRUCTION FROM LIMITED ANGLE DATA.....</b>   | 1245 |
| <i>Paul Gravel ; Yusheng Li ; Samuel Matej</i>   |      |
| <b>OPERATION STABILITY OF A PROTOTYPE FOR CYGNO EXPERIMENT .....</b>   | 1248 |
| <i>A. Apponi ; E. Baracchini ; R. Bedogni ; F. Bellini ; L. Benussi ; S. Bianco ; C. Capoccia ; M. Caponero ; G. Cavoto ; I. A. Costa ; E. Di Marco ; G. D'Imperio ; F. Iacoangeli ; G. Maccarone ; M. Marafini ; G. Mazzitelli ; A. Messina ; A. Orlandi ; E. Paoletti ; L. Passamonti ; A. Pelosi ; F. Petrucci ; D. Piccolo ; D. Pierluigi ; D. Pinci ; F. Pucci ; F. Renga ; G. Rossi ; A. Russo ; G. Saviano ; S. Tomassini</i> |      |
| <b>SEARCH FOR IONIZATION-INDUCED MODULATION OF LIGHT POLARIZATION FOR A NEW DIRECTION TO IMPROVE TIME RESOLUTION OF PET .....</b>  | 1251 |
| <i>Mina Esmaelpour ; Li Tao ; Craig S. Levin</i>   |      |
| <b>LOW-DOSE CT SIMULATION FROM AN AVAILABLE HIGHER DOSE CT SCAN.....</b>   | 1254 |
| <i>Masoud Elhamiast ; Koen Salvo ; Walter Coudyzer ; Johan Nuyts</i>   |      |
| <b>INITIAL RESULTS FROM THE ADVANCED SCINTILLATOR COMPTON TELESCOPE (ASCOT) BALLOON FLIGHT.....</b>  | 1257 |
| <i>Tejaswita Sharma ; Peter F. Bloser ; Jason S. Legere ; Christopher M. Bancroft ; Colin Frost ; Mark L. McConnell ; James M. Ryan</i>  |      |
| <b>MODELING SHIELDED GAMMA-RAY SOURCE SPECTRA USING NON-NEGATIVE MATRIX FACTORIZATION .....</b>  | 1261 |
| <i>K. J. Bilton ; M. S. Bandstra ; T. H. Joshi ; J. C. Curtis ; R. J. Cooper ; K. Vetter</i>   |      |
| <b>LISTMODE RECONSTRUCTION FOR BIOGRAPH VISION PET/CT SCANNER .....</b>  | 1268 |
| <i>Deepak Bharkhada ; Vladimir Panin ; Maurizio Conti ; Margaret E Daube-Witherspoon ; Samuel Matej ; Joel S. Karp</i>   |      |
| <b>SIMULTANEOUSLY IMPROVING ACCURACY AND PRECISION WITHIN DYNAMIC KERNELIZED PET RECONSTRUCTION .....</b>  | 1274 |
| <i>Ju-Chieh Kevin Cheng ; Connor Bevington ; Ivan Klyuzhin ; Vesna Sossi</i>   |      |
| <b>JOINT RECONSTRUCTION OF ACTIVITY AND ATTENUATION IN NON-TOF PET USING A SYNERGISTIC PRIOR TO ENFORCE STRUCTURAL SIMILARITIES .....</b>  | 1277 |
| <i>Ludovica Brusaferrri ; Elise C. Emond ; David Atkinson ; Sébastien Ourselin ; Brian F. Hutton ; Simon Arridge ; Kris Thielemans</i>   |      |
| <b>GAMMA-RAY REJECTION OF THE SIPM-COUPLED MICRO-LAYERED FAST-NEUTRON DETECTOR .....</b>   | 1280 |
| <i>Priyarshini Ghosh ; Daniel M. Nichols ; Wenkai Fu ; Jeremy A. Roberts ; Douglas S. McGregor</i>   |      |

|   |      |
|---|------|
| <b>A 2D-3D DEFORMABLE IMAGE REGISTRATION FRAMEWORK FOR PROTON RADIOGRAPHIES IN ADAPTIVE RADIATION THERAPY .....</b>   | 1283 |
| <i>Prasannakumar Palaniappan ; Sebastian Meyer ; Florian Kamp ; Claus Belka ; Marco Riboldi ; Katia Parodi ; Chiara Gianoli</i>   |      |
| <b>BORON-COATED STRAW NEUTRON IMAGING DETECTOR TESTING AT THE CSNS .....</b>  | 1286 |
| <i>Jeffrey L. Lacy ; Jianrong Zhou ; Zhijia Sun ; Athanasios Athanasiades ; Christopher S. Martin ; Stephen Davenport ; Henry Phung ; Liang Sun</i>   |      |
| <b>4D RECONSTRUCTION WITH PROJECTION AND IMAGE DOMAIN MOTION ESTIMATION .....</b>   | 1289 |
| <i>Shiwei Zhou ; Yujie Chi ; Jing Wang ; Mingwu Jin</i>   |      |
| <b>A NOVEL CONVOLUTIONAL NEURAL NETWORK WITH HIGH CONVERGENCE RATE: APPLICATION TO CT SYNTHESIS FROM MR IMAGES .....</b>  | 1292 |
| <i>Abbas Bahrami ; Alireza Karimian ; Emad Fatemizadeh ; Hossein Arabi ; Habib Zaidi</i>  |      |
| <b>REACTOR PULSE TRACKING USING MICRO-POCKET FISSION DETECTORS IN RESEARCH REACTORS .....</b>   | 1295 |
| <i>D. M. Nichols ; J. C. Boyington ; Y. Cheng ; R. Elzohery ; R. G. Fronk ; W. Fu ; J. D. Hewitt ; C. W. Hilger ; R. M. Hutchins ; K. E. Kellogg ; J. A. Medina ; T. R. Ochs ; M. A. Reichenberger ; S. R. Stevenson ; T. M. Swope ; K. Tsai ; T. C. Unruh ; J. A. Roberts ; D. S. McGregor</i> |      |
| <b>MUON SCATTERING TOMOGRAPHY AS A METHOD FOR DETECTING REBARS AND CRACKS IN CONCRETE .....</b>   | 1300 |
| <i>Magdalena J. Dobrowolska ; Anna K. Kopp ; Jaap J. Velthuis ; Marcus Perry ; Philip Pearson ; Charlotte Cooke</i>   |      |
| <b>WHOLE-BODY DYNAMIC PET: EFFECT OF TEMPORAL GAPS ON FDG K<sub>1</sub> QUANTIFICATION FROM 3D AND 4D RECONSTRUCTION ALGORITHMS .....</b>   | 1303 |
| <i>Zacharias Chalampalakis ; Simon Stute ; Marina Filipovic ; Thibaut Merlin ; Claude Comtat</i>  |      |
| <b>INITIAL PERFORMANCE EVALUATION OF A COMPACT ADD-ON PET SCANNER FOR SMALL ANIMAL PET/CT/RT: A ROTATING DUAL DETECTOR PANEL STUDY .....</b>  | 1306 |
| <i>Xinyi Cheng ; Kun Hu ; Zhenyu Xiong ; Dongxu Yang ; Yiping Shao</i>  |      |
| <b>SENSOR DRIFT ESTIMATION FOR REACTOR SYSTEMS BY FUSING MULTIPLE SENSOR MEASUREMENTS .....</b>   | 1309 |
| <i>Nageswara S. V. Rao ; Christopher Greulich ; Pradeep Ramuhalli ; Sacit M. Cetiner ; Pravallika Devineni</i>  |      |
| <b>DEVELOPMENT AND PERFORMANCE EVALUATION OF A 4π VIEW RADIATION IMAGING SYSTEM .....</b>   | 1311 |
| <i>Zhenlei Lyu ; Peng Fan ; Tianpeng Xu ; Rui Wang ; Yaqiang Liu ; Shi Wang ; Zhaoxia Wu ; Tianyu Ma</i>  |      |
| <b>ANALYSIS OF DATA CORRECTIONS FOR THE FIRST-GENERATION RADIOFREQUENCY-PENETRABLE PET INSERT FOR SIMULTANEOUS PET/MR .....</b>   | 1314 |
| <i>A. Groll ; C. S. Levin</i>   |      |
| <b>A NOVEL AUTOMATIC HYPER-PARAMETER ESTIMATION FOR PENALIZED PET RECONSTRUCTION .....</b>  | 1317 |
| <i>Kyungsang Kim ; Quanzheng Li</i>   |      |
| <b>DESIGN AND PERFORMANCE OF THE LHCb DETECTOR AND FULL REAL-TIME RECONSTRUCTION IN RUN 2 OF THE LHC .....</b>  | 1320 |
| <i>Gianluca Zunica</i>  |      |
| <b>A SIMSET-STIR HYBRID MONTE CARLO MODEL FOR THE PHILIPS VEREOS DIGITAL PET .....</b>  | 1327 |
| <i>J. Silva-Rodriguez ; M. Pineiro-Fiel ; S. J. Archibald ; P. Aguiar ; N. Efthimiou</i>  |      |
| <b>KINETIC MODELING OF PET-18F-FDG IN THE HUMAN ARTERIES WITH INFLAMMATION .....</b>  | 1331 |
| <i>Mamdouh S. Al-Enezi ; Abdelouahed Khalil ; Tamas Fulop ; Eric Turcotte ; M'Hamed Bentourkia</i>  |      |
| <b>RADIOSURGERY MLC UPSTREAM LEAF EDGE DETECTION USING LASSENA LARGE AREA MAPS .....</b>  | 1334 |
| <i>J. L. Pritchard ; J. J. Velthuis ; L. Beck ; C. De Sio ; R. P. Hugtenburg</i>  |      |
| <b>DEEP LEARNING-GUIDED ATTENUATION AND SCATTER CORRECTION WITHOUT USING ANATOMICAL IMAGES IN BRAIN PET/MRI .....</b>   | 1337 |
| <i>Karin Bortolin ; Hossein Arabi ; Habib Zaidi</i>   |      |
| <b>COATED MICRO-PARTICLE SIMULATIONS WITH <sup>6</sup>LIF/ZNS(AG) AND <sup>10</sup>B/ZNS(AG) FOR IMPROVED NEUTRON DETECTION EFFICIENCY .....</b>  | 1340 |
| <i>Faruk Logoglu ; Douglas Wolfe ; Marek Flaska</i>   |      |
| <b>CORRELATIONS BETWEEN PANORAMIC IMAGERY AND GAMMA-RAY BACKGROUND IN AN URBAN AREA .....</b>   | 1342 |
| <i>M. S. Bandstra ; B. J. Quiter ; K. J. Bilton ; J. C. Curtis ; S. Goldenberg ; T. H. Y. Joshi ; M. Salathe</i>  |      |
| <b>PERFORMANCE OF SMALL-PAD RESISTIVE MICROMEGAS FOR OPERATION UNDER HIGH PARTICLE FLOW .....</b>   | 1347 |
| <i>M. G. Alviggi ; M. T. Camerlingo ; V. Canale ; M. Della Pietra ; C. Di Donato ; P. Iengo ; M. Iodice ; F. Petrucci ; G. Sekhniaidze</i>  |      |

|  |      |
|--|------|
| <b>SIMULTANEOUS NEUTRON-PHOTON DOSIMETRY WITH A COMPACT ORGANIC SCINTILLATOR DETECTOR.....</b>   | 1351 |
| <i>C. A. Miller ; A. Di Fulvio ; W. M. Steinberger ; S. D. Clarke ; S. A. Pozzi</i>  |      |
| <b>CALIBRATION AND PROCESSING OF A WAVEFORM MDRF FOR A CLINICAL GAMMA CAMERA .....</b>   | 1354 |
| <i>Neil Momsen ; Lars R. Furenlid</i>  |      |
| <b>MATERIAL DECOMPOSITION METHOD FOR DUAL-MEV ENERGY CT VIA CONVOLUTIONAL NEURAL NETWORK.....</b>  | 1357 |
| <i>Chuanpeng Wu ; Liang Li</i>   |      |
| <b>TOWARDS A LOW COST LEAD ASSAY TECHNIQUE FOR DRINKING WATER USING CMOS SENSORS.....</b>  | 1360 |
| <i>Alexander Deisting</i>  |      |
| <b>CALIBRATION STRATEGY OF THE DSSC X-RAY IMAGER.....</b>  | 1362 |
| <i>A. Castoldi ; M. Porro ; M. Turcato ; J. Engelke ; A. Samartsev ; K. Hansen ; S. Maffessanti ; F. Erdinger ; M. Tangl</i>                                   |      |
| <b>PRESENT STATUS OF THE DUAL-SIDED MICROSTRUCTURED SEMICONDUCTOR NEUTRON DETECTOR (DS-MSND) AND INSTRUMENTATION .....</b>                                     | 1365 |
| <i>Taylor R. Ochs ; Jacob M. Terrell ; Robyn M. Hutchins ; K. Scott Demint ; Steven L. Bellinger ; Luke C. Henson ; Douglas S. McGregor</i>                    |      |
| <b>THE INITIAL EVALUATION OF AN SRM-BASED PET NORMALIZATION METHOD .....</b>   | 1370 |
| <i>Bingxuan Li ; Bo Zhang ; Lingli Yang ; Lei Fang ; Chi Xu ; Lixuan Xie ; Qingguo Xie ; Peng Xiao</i>   |      |
| <b>FABRICATION AND CHARACTERIZATION OF CDZNTSE NUCLEAR DETECTORS .....</b>   | 1373 |
| <i>Stephen U. Egariewe ; Utpal N. Roy ; Benicia A. Harrison ; Carmella A. Goree ; Emmanuel K. Savage ; Jeanette Jones ; Ralph B. James</i>                     |      |
| <b>INVESTIGATION OF SIPM PERFORMANCE STABILITY FOR ON-LINE PET IMAGING WITH SCANNING PROTON PENCIL BEAMS .....</b>   | 1376 |
| <i>Kun Hu ; Xinyi Cheng ; Ron Zhu ; Yiping Shao</i>  |      |
| <b>FEASIBILITY STUDY OF A BREAST PHANTOM IMAGING UTILIZING A TIME RESOLVED OPTICAL TECHNIQUE .....</b>   | 1379 |
| <i>Aristotelis-Nikolaos Rapsomanikis ; Maria Mikeli ; Maria Zioga ; Efstatios Stiliaris</i>  |      |
| <b>MOTION CORRECTION FOR SIMULTANEOUS PET/MR BRAIN IMAGING USING A RF-PENETRABLE PET INSERT .....</b>  | 1383 |
| <i>Jonathan Fisher ; Andrew Groll ; Craig S. Levin</i>   |      |
| <b>PERFORMANCE EVALUATION OF A CLOCK SYNCHRONIZATION OVER FIBER DATA LINKS FOR LARGE EXPERIMENTS .....</b>   | 1386 |
| <i>Yang Hu ; Yonggang Wang ; Jie Kuang</i>   |      |
| <b>PRELIMINARY INVESTIGATION OF AN ADAPTISPECT-C DESIGN WITH ROTATED SQUARE AND HEXAGONAL DETECTORS .....</b>  | 1388 |
| <i>Kesava S. Kalluri ; Navid Zeraatkar ; Benjamin Auer ; Timothy J. Fromme ; Phillip H. Kuo ; Lars R. Furenlid ; Michael A. King</i>                           |      |
| <b>DESIGN OF THE MULTI-SOURCES STATIC CT SYSTEM AND ITS DUAL-ENERGY MONTE CARLO SIMULATION .....</b>   | 1391 |
| <i>Yidi Yao ; Liang Li ; Zhiqiang Chen ; Wuyang Liang ; Xin Jin</i>  |      |
| <b>APPLICATION OF SCATTER EVENTS IN TOF OFFSET CALIBRATION FOR PET .....</b>   | 1394 |
| <i>Liuchun He ; Tao Feng ; Yun Dong ; Lingzhi Hu</i>   |      |
| <b>MOTION DISPLACEMENT FIELD ESTIMATION USING TIME-OF-FLIGHT PET HISTOIMAGES .....</b>   | 1398 |
| <i>Yusheng Li ; Joel S. Karp ; Samuel Matej</i>  |      |
| <b>DUAL INJECTION SHORT TIME PARAMETRIC PET IMAGE .....</b>  | 1401 |
| <i>Kyungsang Kim ; Quanzheng Li</i>  |      |
| <b>LIMITED-ANGLE TOF-PET FOR INTRAOPERATIVE SURGICAL APPLICATION .....</b>   | 1404 |
| <i>Salar Sajedi ; Lisa Bläckberg ; Becca Vittum ; Abhishek Devabhaktuni ; Mahta Maymandi Nejad ; Georges El Fakhri ; Haksoo Choi ; Hamid Sabet</i>             |      |
| <b>CHARACTERIZATION OF CDZNTSE DETECTOR FOR SPECTRAL COMPUTED TOMOGRAPHY .....</b>   | 1408 |
| <i>K. Hameed ; R. Zainon ; M. Tamal</i>  |      |
| <b>ENERGY SENSITIVE X-RAY PHASE CONTRAST IMAGING WITH A CdTe-TIMEPIX3 DETECTOR .....</b>   | 1410 |
| <i>C. Navarrete ; S. Procz ; J. Fey ; G. Roque ; C. Avila ; M. Schuetz ; A. Olivo ; M. Fiederle</i>  |      |
| <b>THE EFFECTS OF DELAY ON THE INPUT FUNCTION FOR EARLY DYNAMICS IN TOTAL BODY PARAMETRIC IMAGING .....</b>  | 1416 |
| <i>Tao Feng ; Yizhang Zhao ; Hongcheng Shi ; Hongdi Li ; Xuezhu Zhang ; Guobao Wang ; Ramsey D. Badawi ; Patricia M. Price ; Terry Jones ; Simon R. Cherry</i> |      |

|  |      |
|--|------|
| <b>NEW DETECTOR DESIGNS FOR HIGH RESOLUTION BRAIN PET</b>  | 1422 |
| <i>Lisa Blackberg ; Salar Sajedi ; Georges El Fakhri ; Hamid Sabet</i>   |      |
| <b>BARRELOID DEFORMATION CORRECTION IN PLANAR IMAGING</b>  | 1427 |
| <i>Despoina Zarketan ; Mina-Ermioni Tomazinaki ; Efstathios Stiliaris</i>  |      |
| <b>DATA-DRIVEN TIMING CALIBRATION OF TOF PET</b>   | 1432 |
| <i>Tao Feng ; Liuchun He ; Yun Dong ; Lingzhi Hu</i>   |      |
| <b>CONTROLLABLE DOPING OF CdTe AND FORMATION OF PN JUNCTION DIODES BY BACKSIDE LASER IRRADIATION</b>   | 1436 |
| <i>Junichi Nishizawa ; Hisaya Nakagawa ; Kateryna Zelenska ; Volodymyr Gnatyuk ; Akifumi Koike ; Toru Aoki</i>   |      |
| <b>ON C-ARM CT IMAGING WITH THE EXTENDED LINE-ELLIPSE-LINE TRAJECTORY</b>  | 1440 |
| <i>Z Guo ; G Lauritsch ; A Maier ; P Kugler ; M Islam ; F Vogt ; F Noo</i>   |      |
| <b>DIRECT ESTIMATION OF NEUROTRANSMITTER ACTIVATION PARAMETERS IN DYNAMIC PET USING REGRESSION NEURAL NETWORKS</b>   | 1443 |
| <i>Yifan Hu ; Georgios I. Angelis ; Peter L. Kench ; Oliver K. Fuller ; Yaqiang Liu ; Tianyu Ma ; Steven R. Meikle</i>   |      |
| <b>DATA-DRIVEN ESTIMATION OF CRYSTAL EFFICIENCIES USING SINGLE EVENTS</b>  | 1447 |
| <i>Tao Feng ; Aaron R Selfridge ; Liuchun He ; Edwin K S Leung ; Yilin Liu ; Benjamin Spencer ; Jeffrey Schmall ; Jinyi Qi ; Simon R Cherry ; Ramsey D Badawi</i>  |      |
| <b>ON THE VALUE OF THE NON-NEGATIVITY CONSTRAINT IN CT</b>   | 1450 |
| <i>Viktor Haase ; Katharina Hahn ; Harald Schöndube ; Karl Stierstorfer ; Andreas Maier ; Frédéric Noo</i>   |      |
| <b>MOTION CORRECTION OF MULTI-FRAME PET DATA</b>   | 1455 |
| <i>Gabriel Cañizares ; Héctor Espinós-Morató ; Joaquín Santos ; Ángel Hernández ; Laura Moliner ; Juan M. Álvarez-Gómez ; Antonio J. González ; Filomeno Sánchez ; María J. Rodríguez-Álvarez ; José M. Benlloch</i> |      |
| <b>GAMMA-RAY POSITION RECONSTRUCTION IN LARGE LANTHANUM-HALIDE CRYSTALS WITH SiPM READOUT: ANALYTICAL VS. NEURAL-NETWORK ALGORITHMS</b>  | 1459 |
| <i>Ion Lădărescu ; Victor Babiano ; Javier Balibrea ; Luis Caballero ; David Calvo ; Cesar Domingo-Pardo ; Jorge Lerendegui ; Pablo Olleros</i>  |      |
| <b>DEVELOPMENT OF A REAL-TIME NEUTRON DETECTOR FOR MEASUREMENT AT WHOLE BODY POSITION IN BNCT</b>  | 1464 |
| <i>H. Tanaka ; T. Takata ; M. Sato ; N. Matsubayashi ; K. Okazaki ; N. Hu ; S. Kawabata ; Y. Sakurai ; S. Masunaga ; M. Suzuki</i>   |      |
| <b>STUDIES OF J-PET DETECTOR TO MONITOR RANGE UNCERTAINTY IN PROTON THERAPY</b>  | 1466 |
| <i>Baran Jakub ; Gajewski Jan ; Pawlik-Niedzwiecka Monika ; Moskal Paweł ; Rucinski Antoni</i>   |      |
| <b>RECENT DEVELOPMENTS IN THE READ-OUT ELECTRODES FOR THE SPHERICAL PROPORTIONAL COUNTER</b>   | 1470 |
| <i>P. Knights ; I. Giomataris ; I. Katsioulas ; K. Nikolopoulos ; R. Ward</i>  |      |
| <b>FIRST COMPTON IMAGING TESTS WITH I-TED</b>  | 1473 |
| <i>V. Babiano-Suárez ; J. Balibrea-Corra ; L. Caballero ; D. Calvo ; C. Domingo-Pardo ; I. Lădărescu ; J. Lerendegui-Marco</i>   |      |
| <b>TESTING HIGHLY INTEGRATED COMPONENTS FOR THE TECHNOLOGICAL PROTOTYPE OF THE CALICE SiW-ECAL</b>   | 1476 |
| <i>A. Irles</i>  |      |
| <b>THE SILICON TRACKING SYSTEM OF CBM: TOWARDS TESTS WITH HEAVY ION COLLISIONS</b>   | 1482 |
| <i>Adrian Rodriguez Rodriguez</i>  |      |
| <b>FIRST MEASUREMENTS ON A DISCRETE-TIME FRONT-END IN 28-NM CMOS TECHNOLOGY FOR TIMING PIXEL DETECTORS</b>   | 1486 |
| <i>Lorenzo Piccolo</i>   |      |
| <b>MOTION-ADAPTIVE GANTRY DEVELOPMENT FOR OPEN-FIELD MOUSE PET</b>   | 1490 |
| <i>Xinwen Zhang ; Julien Bec ; Simon R. Cherry ; Steven R. Meikle ; Andre Z. Kyme</i>  |      |
| <b>ACCELERATED REGULARISED LIST-MODE PET RECONSTRUCTION USING SUBSET RELAXATION</b>  | 1493 |
| <i>Matthew G. Spangler-Bickell ; Timothy Deller ; Floris Jansen</i>  |      |
| <b>TCODE: A NEW MULTITHREAD SIMULATOR FOR SILICON SENSORS IN HEP APPLICATIONS</b>  | 1496 |
| <i>A. Loi ; A. Contu</i>   |      |
| <b>NEUTRON TRANSMISSION MEASUREMENT AND SIMULATION OF TA-181 FOR NEUTRON RESONANCE THERMOMETRY</b>   | 1500 |
| <i>Kaoru Y. Hara ; Minoru Asako ; Tetsuya Kai ; Hiroaki Sato ; Takashi Kamiyama</i>  |      |
| <b>FAST NEUTRON SPECTROSCOPY WITH A NITROGEN-BASED GASEOUS DETECTOR</b>  | 1502 |
| <i>I. Katsioulas ; I. Giomataris ; P. Knights ; T. Neep ; K. Nikolopoulos ; T. Papaevangelou ; R. Ward</i>   |      |

|  |      |
|--|------|
| <b>CONVOLUTIONAL NEURAL NETWORKS FOR BRAIN TUMOR SEGMENTATION USING DIFFERENT SETS OF MRI SEQUENCES .....</b>  | 1505 |
| <i>Masoomeh Rahimpour ; Karolien Goffin ; Michel Koole</i>   |      |
| <b>A LOW-POWER MIXED-SIGNAL ASIC FOR SiPM READOUT AT LOW TEMPERATURE .....</b>   | 1508 |
| <i>Ramshan Kugathasan</i>  |      |
| <b>PCA REGRESSION FOR CONTINUOUS ESTIMATION OF HEAD POSE IN PET/MR .....</b>   | 1511 |
| <i>Ashley G. Gillman ; Alaleh Rashidnasab ; Richard Brown ; Nicholas Dowson ; Benjamin Thomas ; Francesco Fraioli ; Stephen Rose ; Kris Thielemans</i>   |      |
| <b>COMPLEX GEANT4 SIMULATION STUDY FOR THE OPTIMISATION OF MULTI-GRID DETECTOR.....</b>  | 1514 |
| <i>Eszter Dian ; Kalliopi Kanaki ; Anton Khaplanov ; Thomas Kittelmann ; Péter Zagvai ; Richard Hall-Wilton</i>  |      |
| <b>EXPERIMENTAL DETERMINATION OF PROTON HARDNESS FACTORS AT SEVERAL IRRADIATION FACILITIES.....</b>  | 1516 |
| <i>K. Nikolopoulos ; P. Allport ; F. Bögelspacher ; K. Bruce ; R. Canavan ; A. Dierlamm ; L. Gonella ; P. Knights ; I. Kopsalis ; I. Mateu ; M. Moll ; B. Phoenix ; T. Price ; L. Ram ; F. Ravotti ; C. Simpson-Allsop ; C. Wood</i>                     |      |
| <b>SOFTWARE DEFECT PREDICTION ON UNLABELED DATASET WITH MACHINE LEARNING TECHNIQUES .....</b>  | 1522 |
| <i>Elisabetta Ronchieri ; Marco Canaparo ; Mauro Belgiovine ; Davide Salomoni</i>  |      |
| <b>A PIXEL READ-OUT FRONT-END IN 28 NM CMOS WITH TIME AND SPACE RESOLUTION .....</b>   | 1524 |
| <i>Massimo Barbaro ; Sandro Cadeddu ; Luigi Casu ; Francesco De Canio ; Luca Frontini ; Adriano Lai ; Valentino Liberali ; Corrado Napoli ; Lorenzo Piccolo ; Angelo Rivetti ; Jafar Shojaii ; Stefano Sonedda ; Alberto Stabile ; Gianluca Traversi</i> |      |
| <b>A PHANTOM STUDY OF A DUAL ENERGY DENTAL CONE BEAM COMPUTED TOMOGRAPHY PROTOTYPE.....</b>  | 1528 |
| <i>Sungho Chang ; Sang Chul Lee</i>  |      |
| <b>MODELLING OF SCATTER IN THE SYSTEM MATRIX FOR 3D PET IMAGE RECONSTRUCTION: A COMPARATIVE STUDY.....</b>   | 1531 |
| <i>Moritz Schaar ; Magdalena Rafecas</i>   |      |
| <b>DEVELOPMENT OF A SIMULATION FRAMEWORK FOR SPHERICAL PROPORTIONAL COUNTERS .....</b>   | 1533 |
| <i>R. Ward ; I. Katsioulas ; P. Knights ; J. Matthews ; T. Neep ; K. Nikolopoulos ; R. Owen</i>  |      |
| <b>NON-RIGID MOTION DETECTION FOR MOTION TRACKING OF THE HEAD .....</b>  | 1536 |
| <i>David Henry ; Roger Fulton ; Julian Maclaren ; Murat Aksøy ; Roland Bammer ; Andre Kyme</i>   |      |
| <b>FAST FRONT END ELECTRONIC FOR HIGH DETECTOR CAPACITANCE SiC BASED FAST NEUTRONS SENSORS .....</b>   | 1539 |
| <i>A. T. Tchoualack ; L. Ottaviani ; W. Rahajandraibe ; W. Vervisch ; A. Klix ; J. P. Walder</i>   |      |
| <b>A NOVEL TECHNOLOGY OF MULTI-PINHOLE SPECT FOR HUMAN MYOCARDIAL PERFUSION IMAGING.....</b>   | 1542 |
| <i>Chen Zhang ; Haipeng Wang ; Ming Xu ; Tianpeng Xu ; Yansong Hou ; Nianming Jiang ; Yaqiang Liu ; Mai Liu</i>  |      |
| <b>MERMAID - A PET PROTOTYPE FOR SMALL AQUATIC ANIMAL IMAGING .....</b>  | 1545 |
| <i>M. Zvolinský ; S. Seeger ; M. Schaar ; C. Schmidt ; M. Rafecas</i>  |      |
| <b>MODELLING PHOTOCATHODE PERFORMANCE USING DENSITY FUNCTIONAL THEORY .....</b>  | 1547 |
| <i>Jamie O. D. Williams ; Jon S Lapington ; Richard Campion ; Tom Foxon</i>  |      |
| <b>MONTE CARLO MODELING OF ELECTRON MULTIPLICATION IN AMORPHOUS SILICON BASED MICROCHANNEL PLATES.....</b>   | 1549 |
| <i>J. Löffler ; J. Thomé ; M. Belhaj ; L. Van Kessel ; C. W. Hagen ; C. Ballif ; N. Wyrsch</i>   |      |
| <b>LYRA: A MULTI-CHIP ASIC DESIGNED FOR HERMES X AND GAMMA RAY DETECTOR .....</b>  | 1555 |
| <i>Massimo Gandola ; Marco Grassi ; Filippo Mele ; Piero Malcovati ; Giuseppe Bertuccio</i>  |      |
| <b>DIGITAL ZEBRAFISH PHANTOM BASED ON MICRO-CT DATA FOR IMAGING RESEARCH.....</b>  | 1558 |
| <i>M. Zvolinský ; N. Schreiner ; S. Seeger ; M. Schaar ; S. Rakters ; M. Rafecas</i>   |      |
| <b>CHARACTERIZATION OF LYSO AND CeBr<sub>3</sub> DETECTORS WITH LATERAL SIDES READOUT FOR A MULTILAYER COMPTON-PET .....</b>   | 1560 |
| <i>John Barrio ; Neus Cucarella ; Antonio J. Gonzalez ; Sergio Aguilar ; Andrea Gonzalez-Montoro ; Victor Ilisie ; Efthymios Lamprou ; Filomeno Sanchez ; Jose M. Benlloch</i>   |      |
| <b>SENTIMENT ANALYSIS FOR SOFTWARE CODE ASSESSMENT .....</b>   | 1563 |
| <i>Elisabetta Ronchieri ; Radmila Juric ; Marco Canaparo</i>   |      |
| <b>FEASIBILITY OF A NOVEL DESIGN OF A HIGH RESOLUTION/SENSITIVITY ANIMAL PET SCANNER USING THICK AND THIN ARRANGEMENT OF MONOLITHIC SCINTILLATORS .....</b>  | 1565 |
| <i>Amirhossein Sanaat ; Mohammad Reza Ay ; Habib Zaidi</i>   |      |
| <b>ACCURATE ESTIMATION OF DEPTH OF INTERACTION IN PET ON MONOLITHIC CRYSTAL COUPLED TO SIPMS USING A DEEP NEURAL NETWORK AND MONTE CARLO SIMULATIONS .....</b>   | 1568 |
| <i>Amirhossein Sanaat ; Habib Zaidi</i>  |      |

|  |      |
|--|------|
| <b>COMPARISON OF POINT SPREAD FUNCTION VARIATIONS ACROSS THE FIELD OF VIEW<br/>OF A PET/MR SCANNER WITH A STANDARD RESOLUTION PET/CT.....</b>        | 1571 |
| <i>Jose M. Anton-Rodriguez ; Evangelos Raptis ; Maelene Lohezic ; Anthony Archer ; Julian C. Matthews</i>  |      |
| <b>CLINICAL ASSESSMENT OF LESION DETECTABILITY IN DYNAMIC WHOLE-BODY PET<br/>IMAGING USING COMPARTMENTAL AND PATLAK PARAMETRIC MAPPING .....</b>     | 1577 |
| <i>Neda Zaker ; Fotis Kotasidis ; Valentina Garibotto ; Habib Zaidi</i>  |      |
| <b>MANUFACTURING OF PHYSICAL BREAST PHANTOMS WITH 3D PRINTING<br/>TECHNOLOGY FOR X-RAY BREAST IMAGING.....</b>                                       | 1580 |
| <i>Francesca Di Franco ; Giovanni Mettivier ; Antonio Sarno ; Antonio Varallo ; Paolo Russo</i>  |      |
| <b>A NOVEL CONVOLUTIONAL NEURAL NETWORK FOR PREDICTING FULL DOSE FROM<br/>LOW DOSE PET SCANS .....</b>   | 1585 |
| <i>Amirhossein Sanaat ; Hossein Arabi ; Habib Zaidi</i>  |      |
| <b>FUNDAMENTALS OF PERIMETER GATED SINGLE PHOTON AVALANCHE DIODES USED<br/>IN SILICON PHOTOMULTIPLIERS FOR NUCLEAR IMAGING.....</b>                  | 1588 |
| <i>Mst Shamim Ara Shawkat ; Nicole McFarlane</i>   |      |
| <b>SIMULATION OF CHARGE CARRIER TRANSPORT IN PIXELATED MICRO-STRUCTURED<br/>SEMICONDUCTOR NEUTRON DETECTORS .....</b>                                | 1590 |
| <i>Diego Laramore ; Sanchit Sharma ; Steven L. Bellinger ; Amir A. Bahadori ; Walter J. McNeil</i>   |      |
| <b>AN UPGRADE SOLUTION FOR BELLE II DAQ SYSTEM .....</b>   | 1593 |
| <i>Zhen'An Liu ; Jia Tao ; Jingzhou Zhao ; Hanjun Kou ; Pengcheng Cao ; Jianing Song ; Wenxuan Gong ; Ryosuke Itoh ; Satoru Yamada ; Qidong Zhou</i> |      |
| <b>STRONTIUM IODIDE RADIATION INSTRUMENT (SIRI) – EARLY ON-ORBIT RESULTS .....</b>   | 1595 |
| <i>Lee J. Mitchell ; Bernard F. Philips ; J. Eric Grove ; Theodore Finne ; Mary Johnson-Rambert ; W. Neil Johnson</i>                                |      |
| <b>ABSORBED DOSE MODEL TO SCAN PARAMETERS IN DENTAL CONE BEAM COMPUTED<br/>TOMOGRAPHY .....</b>  | 1604 |
| <i>Shumei Jia ; Xiaoyue Guo ; Yuxiang Xing ; Li Zhang</i>  |      |
| <b>ASSESSMENT OF SPECT SYSTEMS USING MULTIPLE DETECTOR TECHNOLOGIES .....</b>  | 1608 |
| <i>Kelsea P. Cronin ; John L. Humm ; James M. Woolfenden ; Eric Clarkson ; Matthew A. Kupinski ; Lars R. Furenlid</i>                                |      |
| <b>BIAS VOLTAGE CALIBRATIONS FOR A 1-MILLIMETER RESOLUTION CLINICAL PET<br/>SYSTEM.....</b>  | 1610 |
| <i>Myungheon Chin ; Derek Innes ; Craig S. Levin</i>   |      |
| <b>SENSITIVE X-RAY DETECTORS SYNTHESISED FROM CSPBBr<sub>3</sub> .....</b>   | 1613 |
| <i>Logan J. Forth ; Mingqing Wang ; Issy Braddock ; Jia C. Khong ; Rob Moss ; Paul Sellin ; Kwang L. Choy ; Robert Speller</i>                       |      |
| <b>NON-DESTRUCTIVE NUCLEAR MEASUREMENTS IN SUPPORT TO NUCLEAR INDUSTRY.....</b>  | 1618 |
| <i>B. Pérot</i>  |      |
| <b>JENDL PROJECT AND RELATED ACTIVITIES.....</b>   | 1622 |
| <i>Kenichi Tada ; Osamu Iwamoto</i>  |      |
| <b>Author Index</b>  |      |