DigitMI 910

The First Clinical Whole-body All-Digital PET/CT

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Introduction about the DigitMI 910

DigitMI 910 is the first product of the whole-body All-digital PET/CT scanner developed from the Raysolution.

HIGHLIGHTS

- the CREATIVE MEDICAL EQUIPMENT approved by CFDA
- MVT Technology enabled
- Highest Sensitivity of unit Axial-FOV
- Highest Spatial Resolution of unit crystal size
Introduction

Black Techs in the integration from Detector Modular to the System

- **All-digital PET detectors**
  
  LYSO: SiPM:MVT 1:1 coupled and 1:1 readout
  
  20 Gbps data processing in real time.

- **Software-driven System**
  
  software Pulse to Singles
  
  software Singles to Coincidence
  
  software Calibration & correction

- **Advanced Image Reconstruction**

  Corrections
  
  FBP, OSEM, PSF-OSEM, DKL-TV
Specification of DigitMI Series

<table>
<thead>
<tr>
<th>Models</th>
<th>DigitMI-910</th>
<th>DigitMI-920</th>
<th>DigitMI-X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Port</td>
<td>720 mm</td>
<td>720 mm</td>
<td>780 mm</td>
</tr>
<tr>
<td>Axial FOV</td>
<td>100 mm</td>
<td>200 mm</td>
<td>300 mm</td>
</tr>
<tr>
<td>Detector Material</td>
<td>LYSO/SiPM (1:1)</td>
<td>LYSO/SiPM (1:1)</td>
<td>LYSO/SiPM (1:1)</td>
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<tr>
<td>All-digital Enabled</td>
<td>Yes, MVT</td>
<td>Yes, MVT</td>
<td>Yes, MVT</td>
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<tr>
<td>Time Resolution /TOF</td>
<td>&lt; 550 ps / Yes</td>
<td>&lt; 550 ps / yes</td>
<td>~ 400 ps / yes</td>
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<tr>
<td>Spatial Resolution</td>
<td>~2mm FWHM</td>
<td>~2mm FWHM</td>
<td>~2mm FWHM</td>
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<tr>
<td>Sensitivity</td>
<td>~4 kcps/mBq</td>
<td>~14 kcps / mbq</td>
<td>~25 kcps/mbq</td>
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</tbody>
</table>

Advantages & Benefits

- **Better Spatial Resolution for Early Discovery**
  ~2mm FWHM
  ~2x Enhanced

- **Higher Sensitivity for Faster Scan and Lower Dose**
  ~ 4 kcps/Mbq @ 10cm Axial FOV
  ~ 1.5x Enhanced

- **Higher Time Resolution for Better Image Quality**
  ~ 550 ps and 400 ps next
  ~ 4x SNR Enhanced
Images of the DigitMI 910

Animal and Clinical Studies

• Rabbit
  ~$^{18}$F-FDG & $^{18}$F-NaF

• Whole-body
  Cancer cases and accurate diagnosis

• Brian
  Low dose and short time Scanning
About Raysolution

Focus on Clinical All-digital PET developing

<table>
<thead>
<tr>
<th>Design</th>
<th>Development</th>
<th>Assemble</th>
<th>Test</th>
<th>Evaluation</th>
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<tbody>
<tr>
<td></td>
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<td>2015.09 Founded in EZhou</td>
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<td>2016.09 Porotype of DigitMI 910</td>
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<td></td>
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<td>2017.02 Finish the CFDA Test</td>
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<td>2018.01 the Creative Medical Equipment approved by CFDA</td>
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<td>2018.07 Finish the Clinical Trial</td>
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<td>2018.11 Propose to CFDA</td>
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<td></td>
<td>2019.02 GMP approved</td>
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<td>2019.05 CFDA Approved</td>
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Lab Session in Raysolution

What will we see in Raysolution?

- GMP approved workplace
- Different types of PET scanners (Whole-body PET and Brian PET)
- Different types of CT system (16Slices and 64 Slices)
Lab Session in Raysolution

What will we do?

• Learn the 910 system
• Learn the NEMA
• Operate the spatial resolution evaluation

<table>
<thead>
<tr>
<th>Time</th>
<th>Task</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>14:00</td>
<td>Understanding DigitMI 910 PET/CT system</td>
<td>1. Visit DigitMI 910 clinical PET/CT system; 2. Learn the procedure of clinical PET/CT examination; 3. Learn the PET/CT image, including PET/CT image fusion;</td>
</tr>
<tr>
<td>14:30</td>
<td>Learn how to evaluation the performance of PET</td>
<td>1. Understanding PET performance following by NEMA NU 2-2012; 2. Learn the procedure, phantom, data analysis in performance testing, especially Spatial Resolution test.</td>
</tr>
<tr>
<td>15:30</td>
<td>Actual operation</td>
<td>1. Using DigitMI 910 system, take a PET spatial resolution test by NEMA NU 2-2012 (using Na22 point source); 2. Using DigitMI 910, acquire data, reconstruct image, analysis</td>
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</table>
Thank you !

Welcome to Raysolution!
Upright and Daring  ·  守正创新