

of the **easyPET**



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Educational kit

A modern, digital and flexible platform for **teaching** the fundamentals of Statistics & Particles Detection.



2015 Special Offers
Refurbished Products

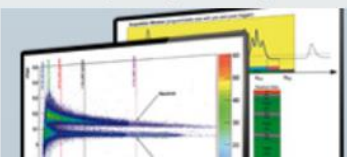


Special Offers

Latest News from CAEN
CAEN Electronic Instrumentation



Digital Pulse Processing
Dedicated algorithms to turn your digitizer in a complete acquisition setup.



Desktop Digitizers
From 1 to 32 channels, up to 5 GS/s - FPGA firmwares for Digital Pulse Processing.

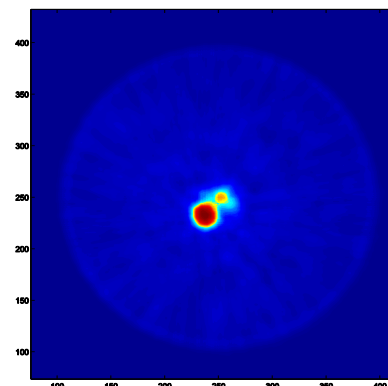
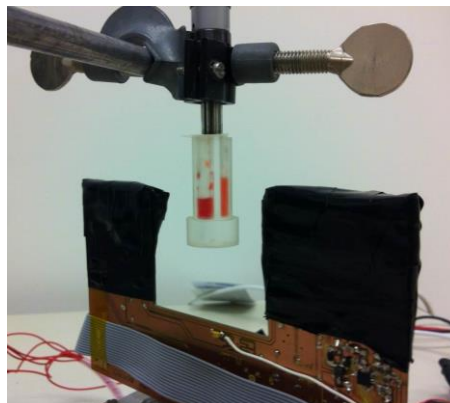


Sucessfull Technology transfer

- easyPET



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- licensed (educational version)



Expected to be launched to the market next July



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- Education

Some Implemented Functionalities:

- 2D/3D imaging capabilities – FOV 5 cm \varnothing x h
- Gamma spectroscopy with both scintillators
 - _ Spectra distribution for different gamma sources
 - _ Positron annihilation spectra w/o coincidence
 - _ Scintillator detection efficiency
 - _ Annihilation efficiency
 - _ Sensitivity
- Acceptance time window adjustment
 - _ Study of true/random coincidences ...
- Position resolution determination
- ...



Components and implementation

- All system in one board

- _ Pairs of LYSO+SiPM scintillators
- _ Controllable SiPM polarization voltage
- _ Signal amplification for both detector cells
- _ signal threshold
- _ Coincidence module
- _ Selectable coincidence time window
- _ Signal readout – individual readout from both scintillators; coincidence

- Communication and step motor control made with Arduino



Software

- Arduino program for set motor control and coincidences readout
- MatLab based software capable of:
 - _ Set step motor parameters
 - _ Set SiPM voltage, discrimination level ...
 - _ Count coincidences
 - _ Real time representation of the LOR (pixel size selection)
 - _ Save data + parameters
 - _ Radioactive decay correction
 - _ 3D acquisition and reconstruction
 - _ ... and much more



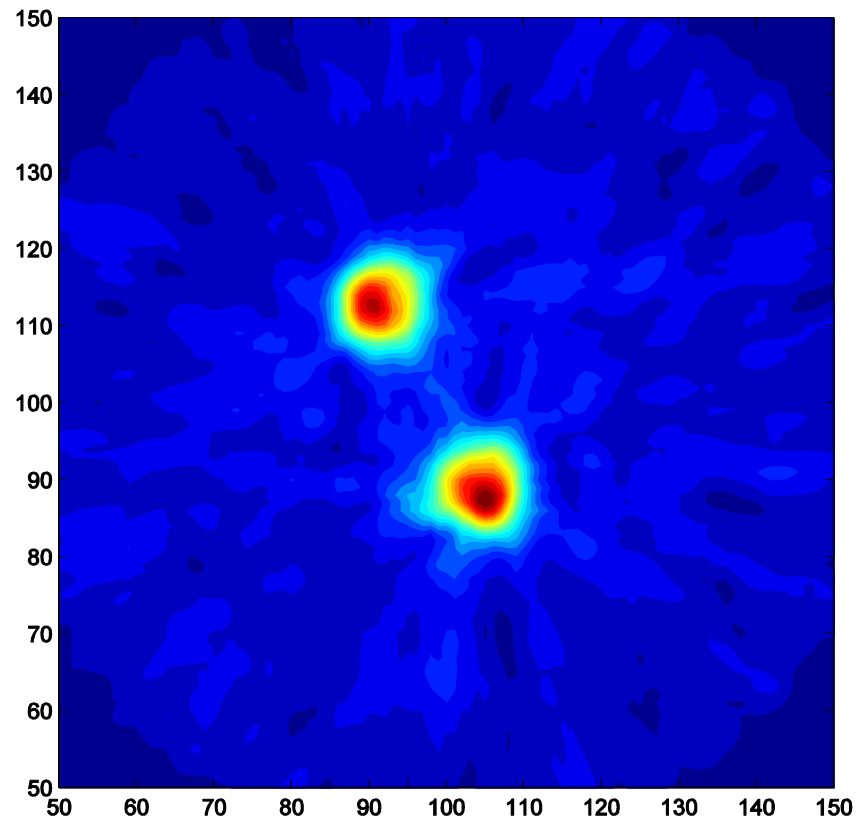
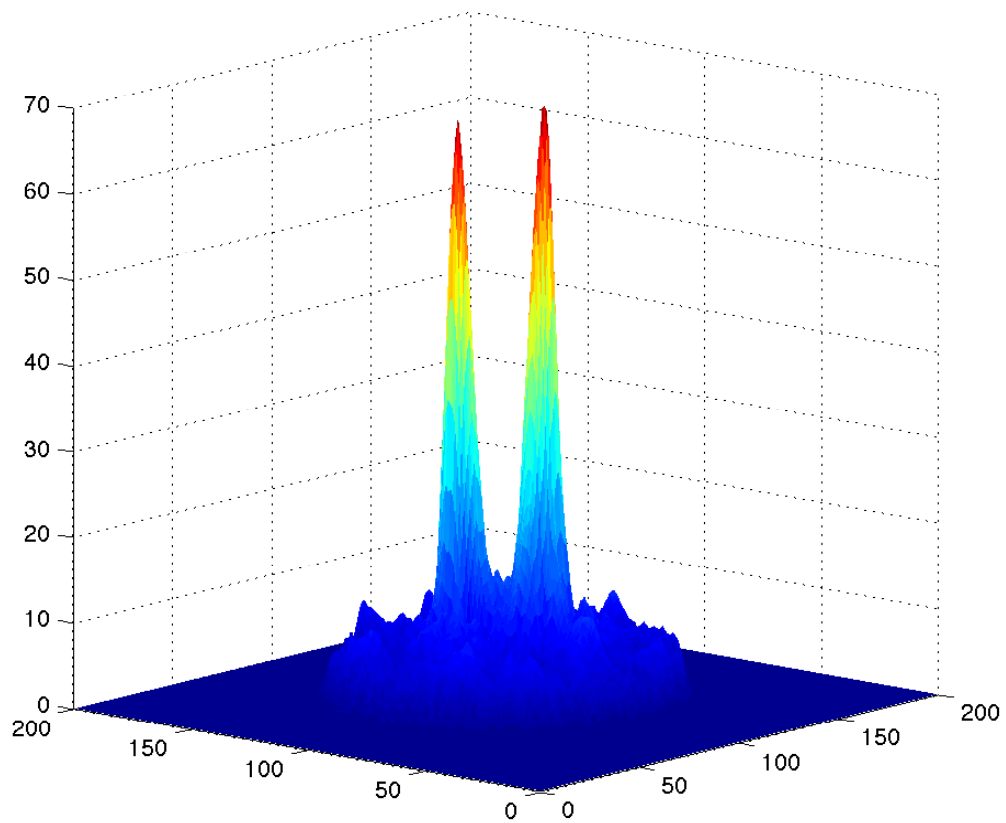
Some image examples

- ^{22}Na sources
- ^{18}F FDG solutions



na sources

s with 9 mm distance between centers)

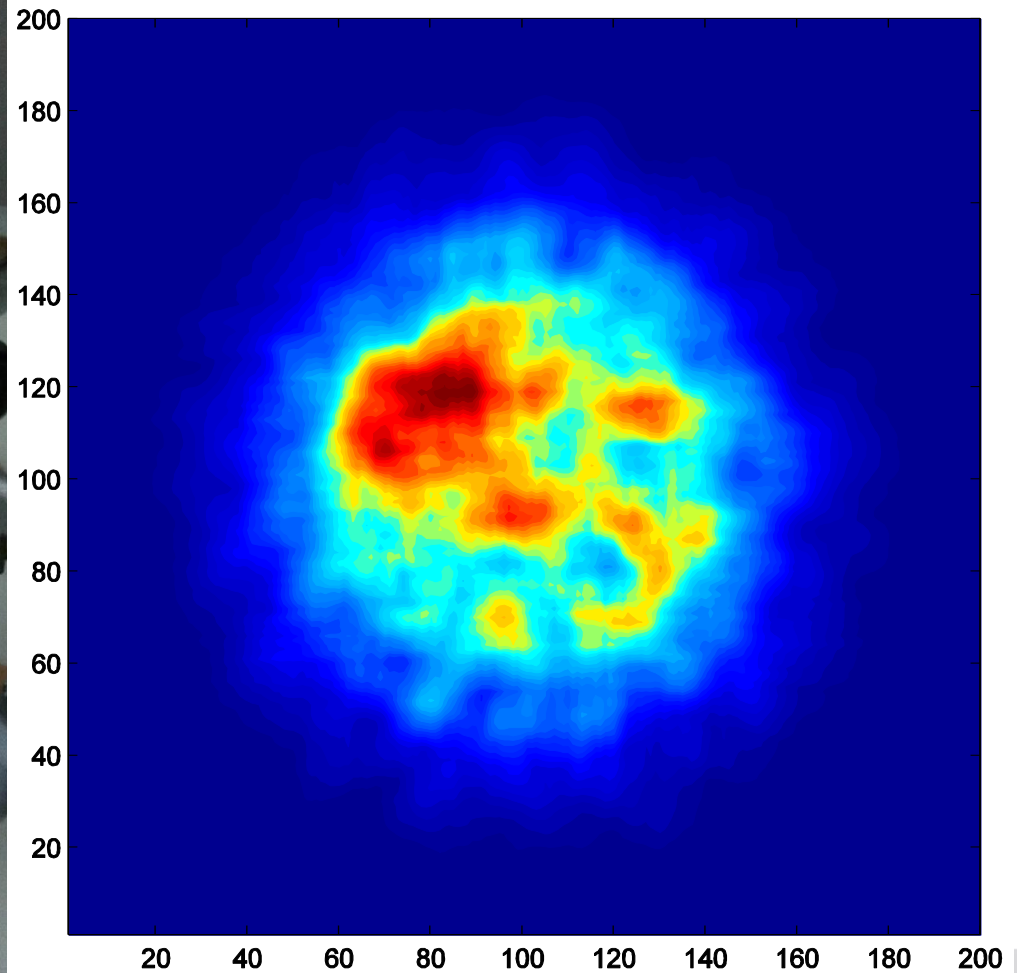
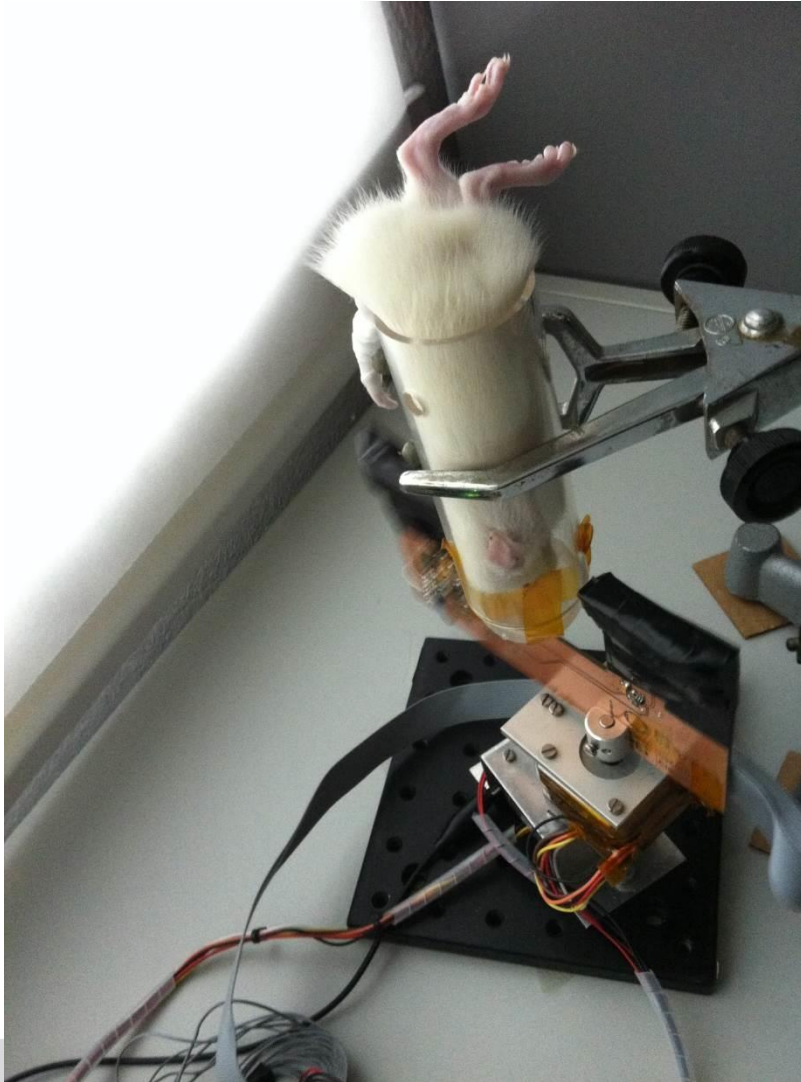


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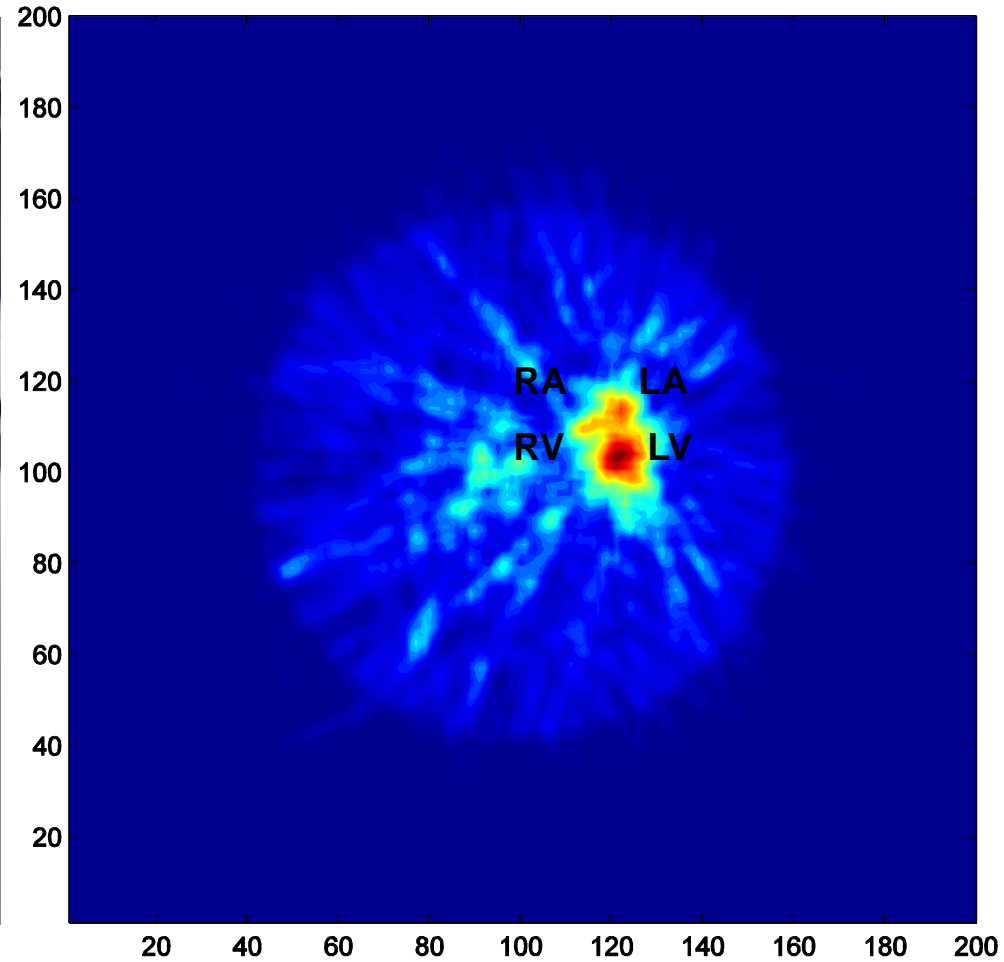
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Rat in the brain region - ^{18}F FDG



Brain an heart - ^{18}F FDG

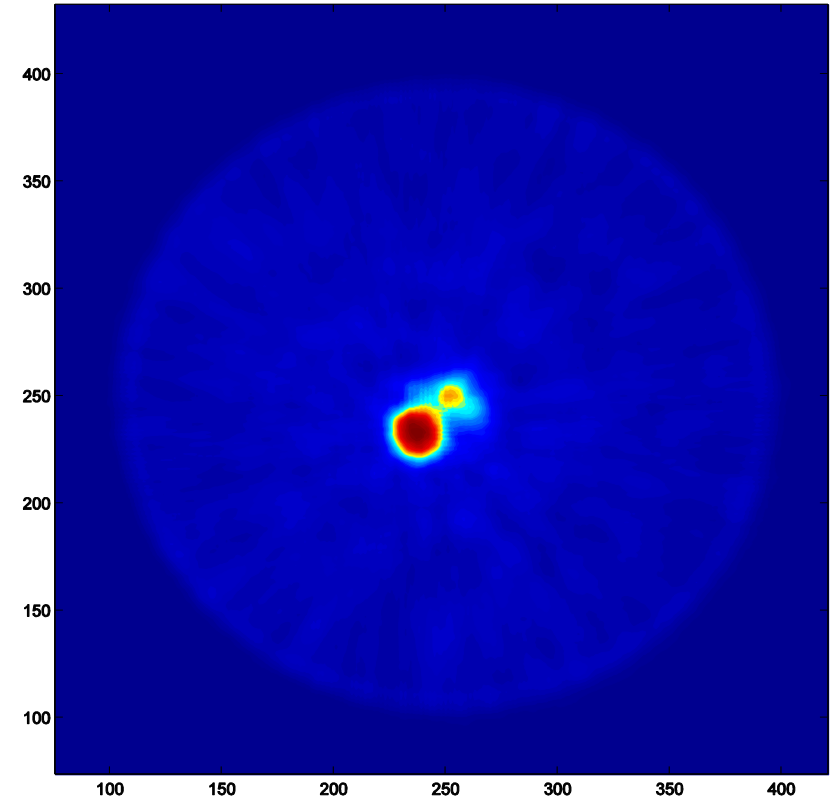
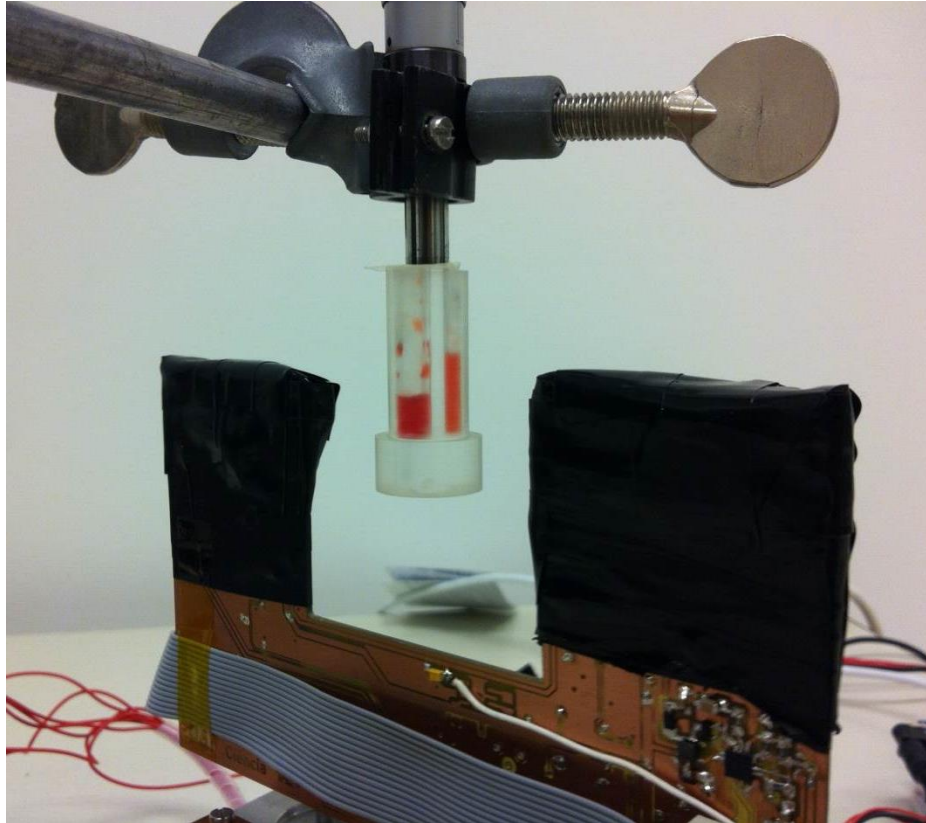


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Phantom filled with ^{18}F FDG solution



Two holes with 2 and 5 mm diameter separated by 2 mm

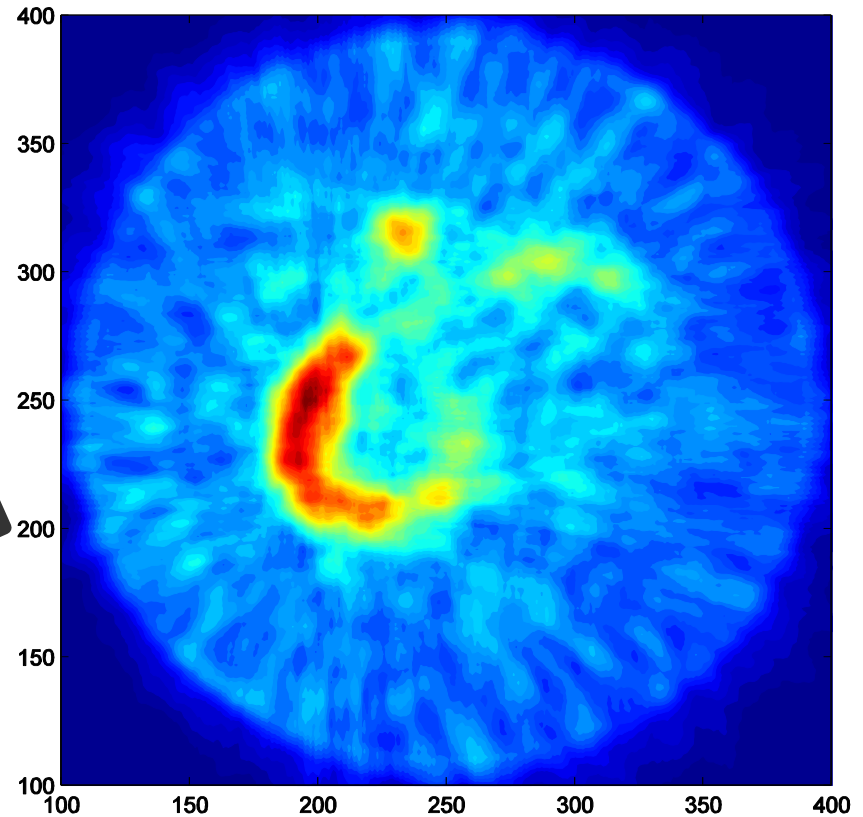


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Playing with cotton filled with ^{18}F FDG

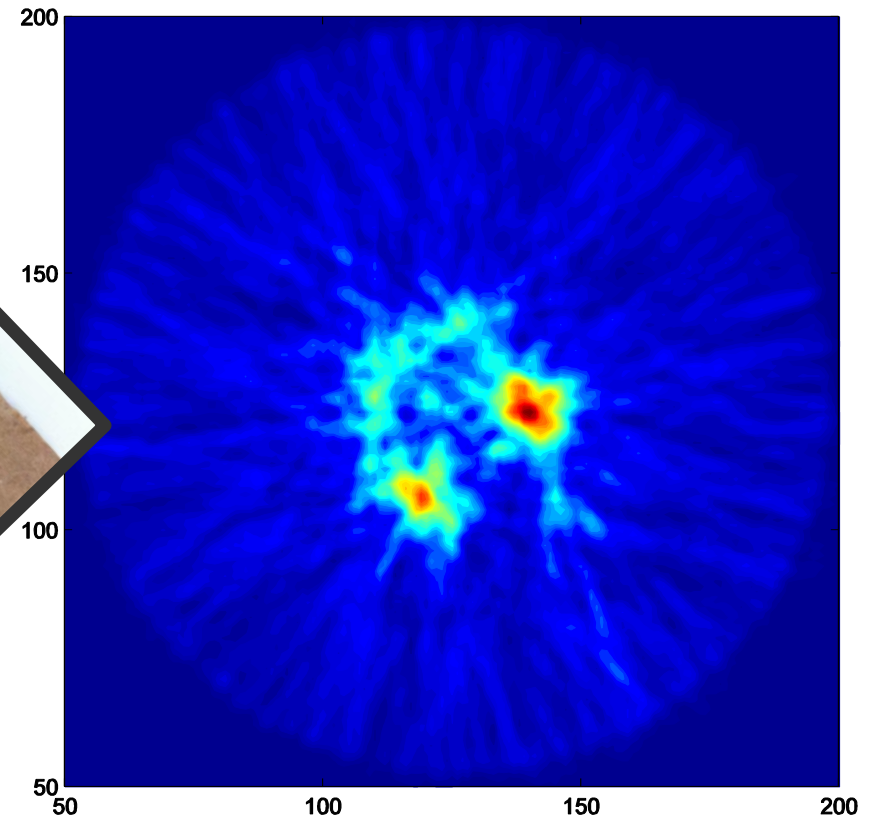
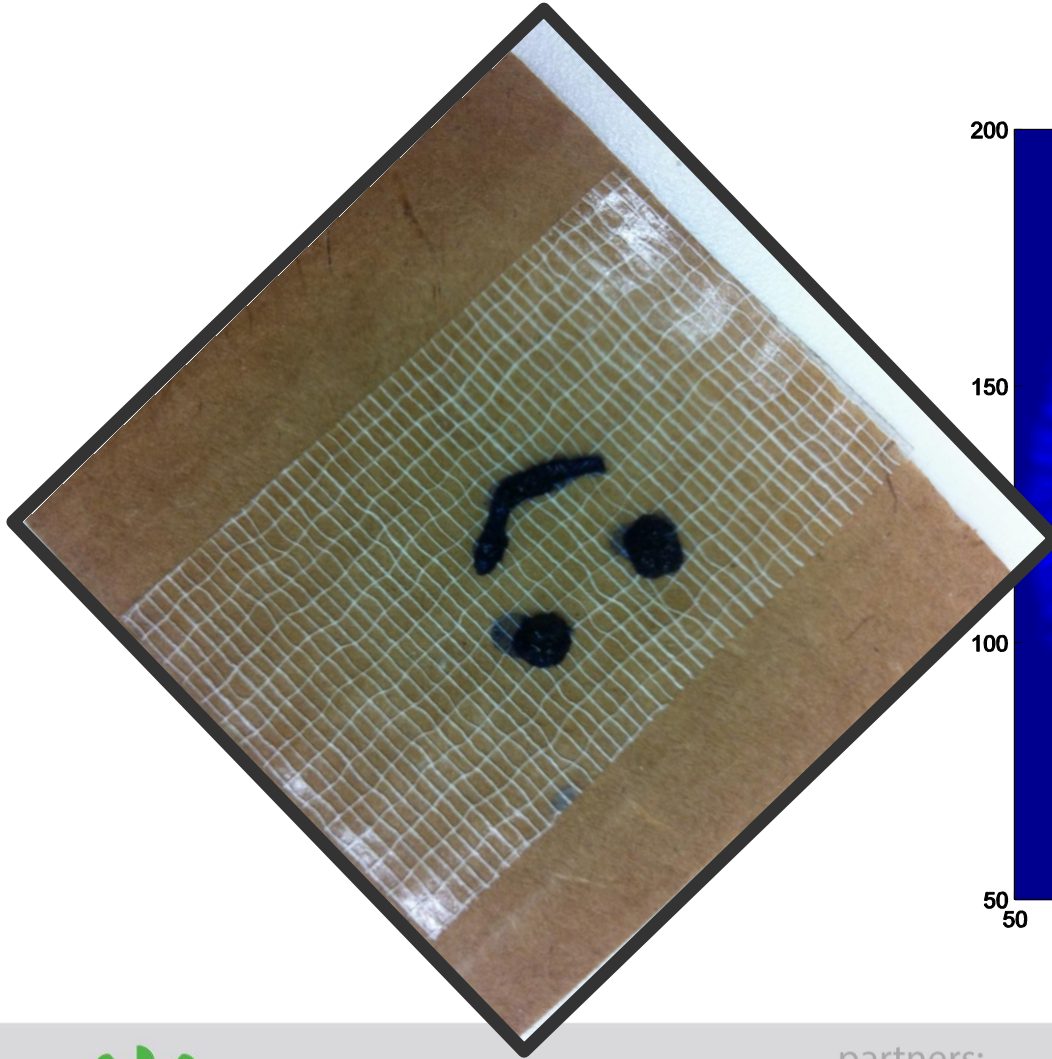


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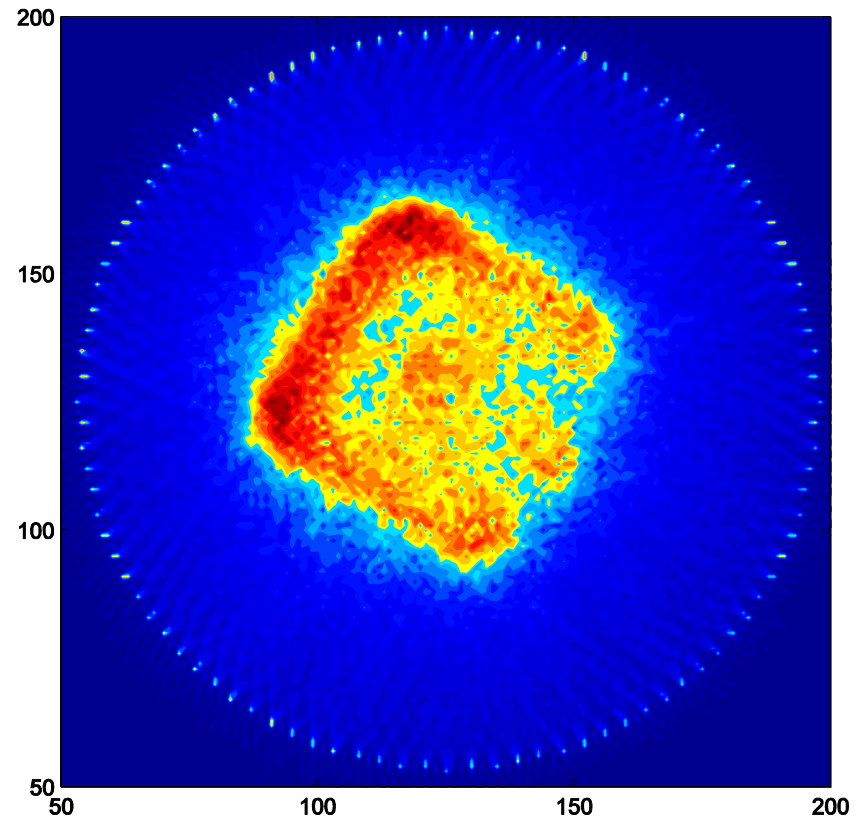


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UA logo in filter paper filled with ^{18}F FDG (~5 uCi)



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