

**A TRIBUTE TO TONI**

**THE CONNECTION BETWEEN  
TOF & MEDICAL TECHNOLOGY**



## **AGRADECIMIENTOS DE LA TESIS**

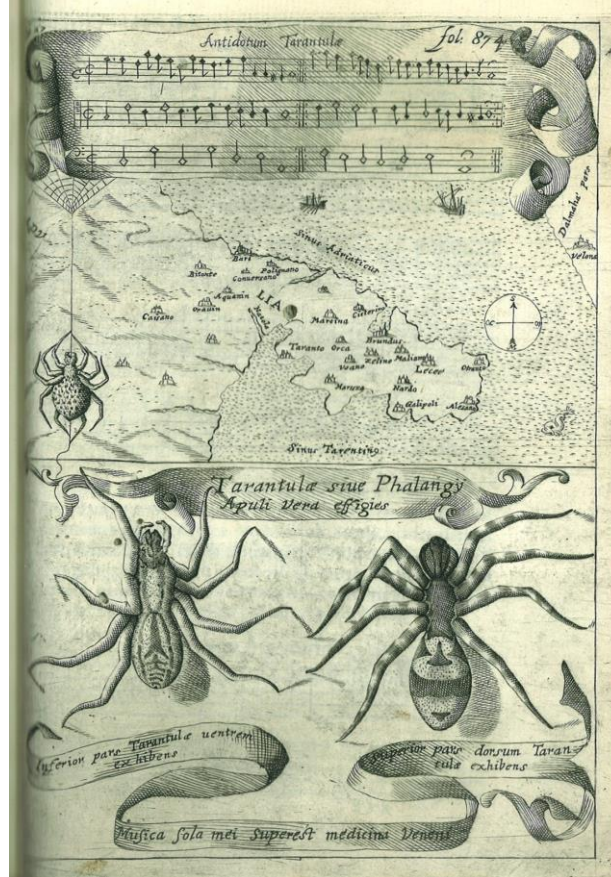
**“A mi director de tesis, XXX XXX,**

**De quién he aprendido TODO LO POCO que sé.”**

## ATHANASIUS KIRCHER

The Last Man Who  
Knew Everything

1602, Geisa, Wartburg  
1680, ROMA

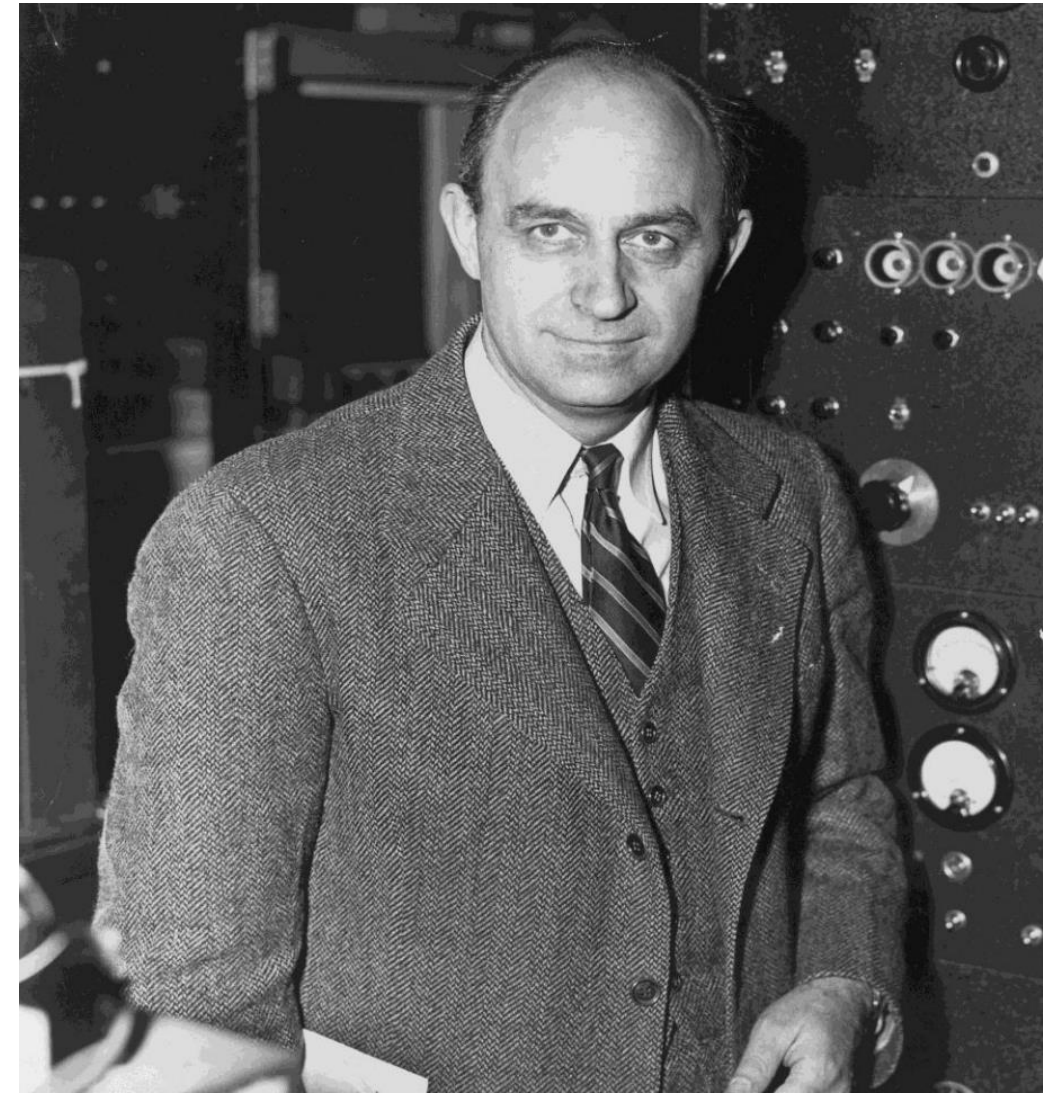


## ENRICO FERMI:

The Last Man Who Made Disruptive Contributions  
Both To Theoretical and Experimental Physics

1901, ROMA

1954, Chicago



MUNDUS SUBTERRANEUS

“**HIEROGLYPHICS** Language of the ancient Egyptians, invented by the priests to conceal their shameful secrets. To think that there are people who understand them! But **perhaps the whole thing is just a hoax?** —Gustave Flaubert, Dictionary of Received Ideas”

# THE RISE & DECLINE of COLD FUSION: 1989

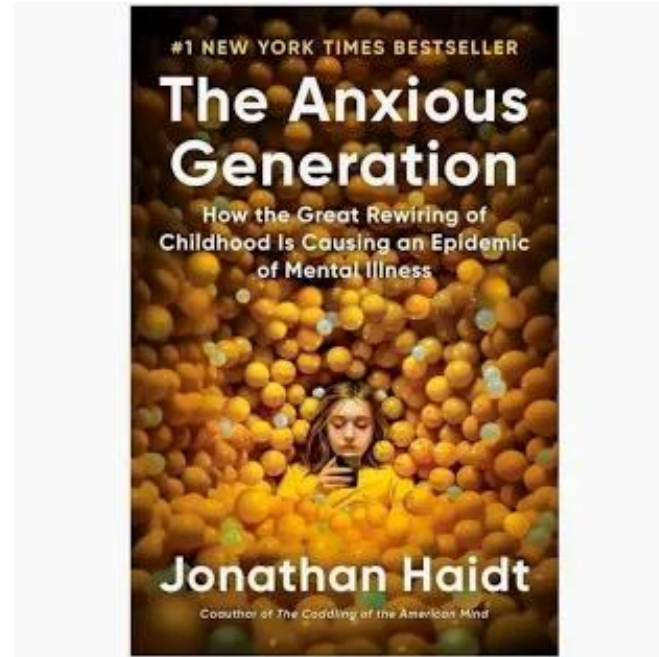
## CERN/EP 90-36



- **23 March** FLEISCHMANN & PONS at press conference claim heat, neutrons, gammas and tritium.
- **31 March** FLEISCHMANN lectures at CERN – very successfully.



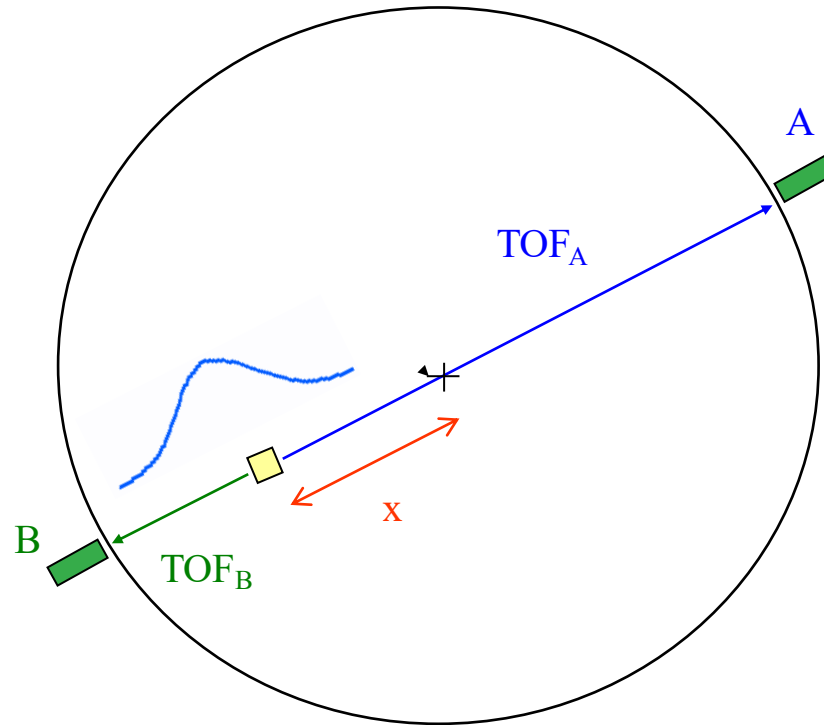
## SCIENTIFIC RESEARCH: CRITICAL THINKING & TECHNOLOGY



## DISCREETNESS:

**SECRETARY:** the person who keeps the secrets

# PRINCIPLES OF TOF PET



$$t = 2x/c$$

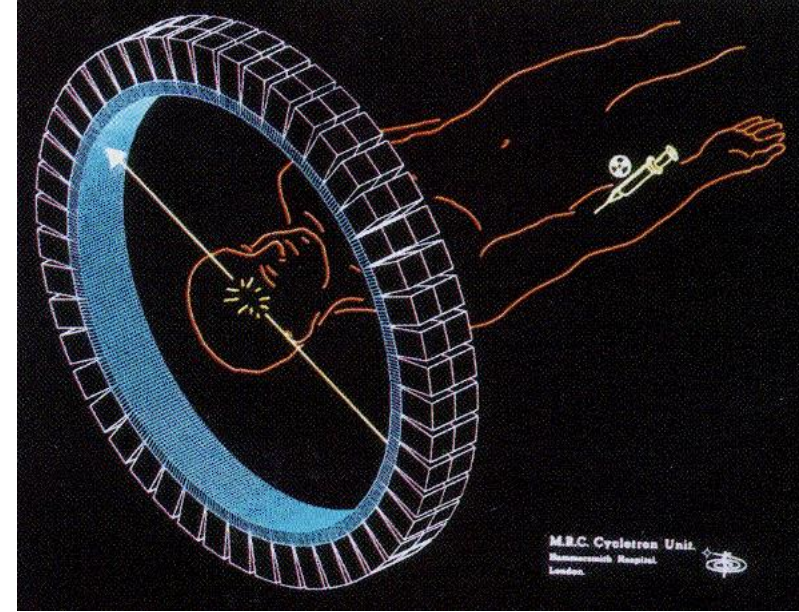
$$x = c t/2$$

Uncertainty on this position:

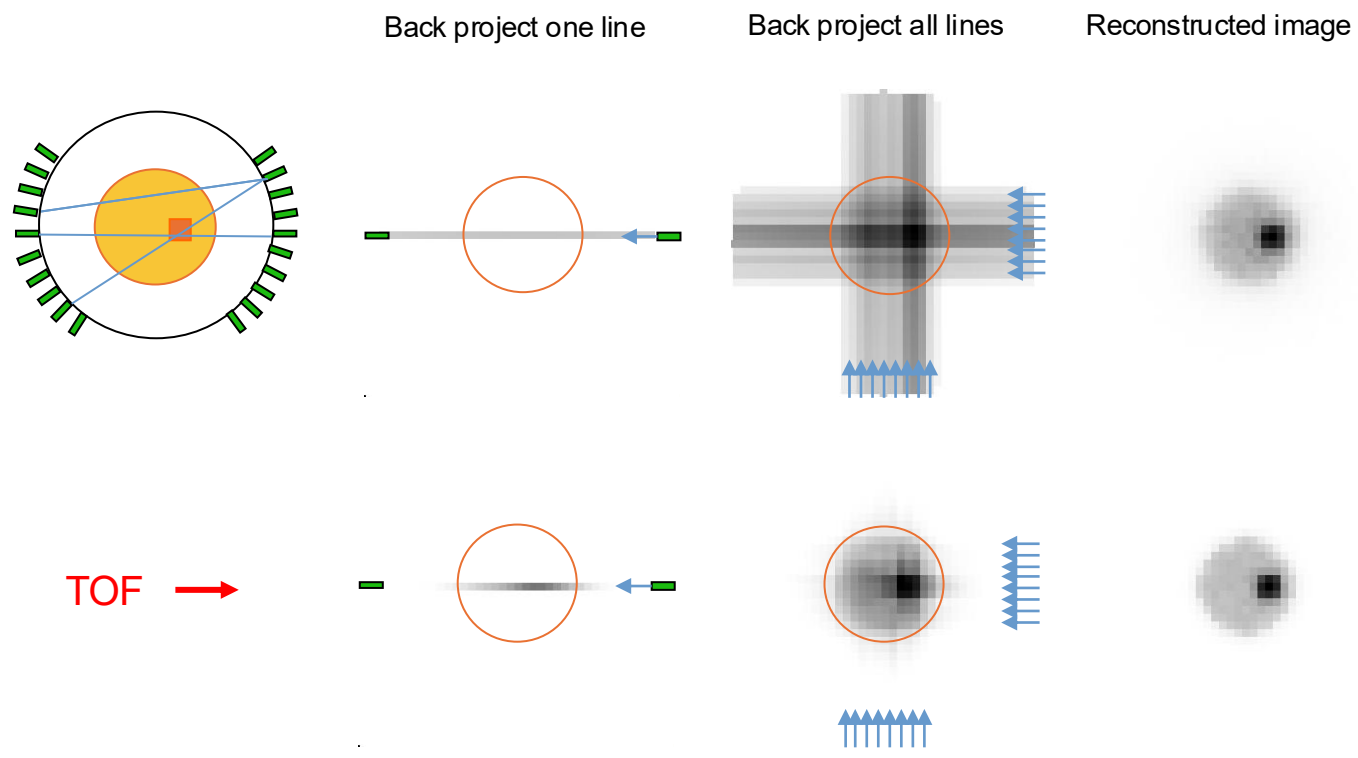
$$\Delta x = c \Delta t/2$$

Positional uncertainty

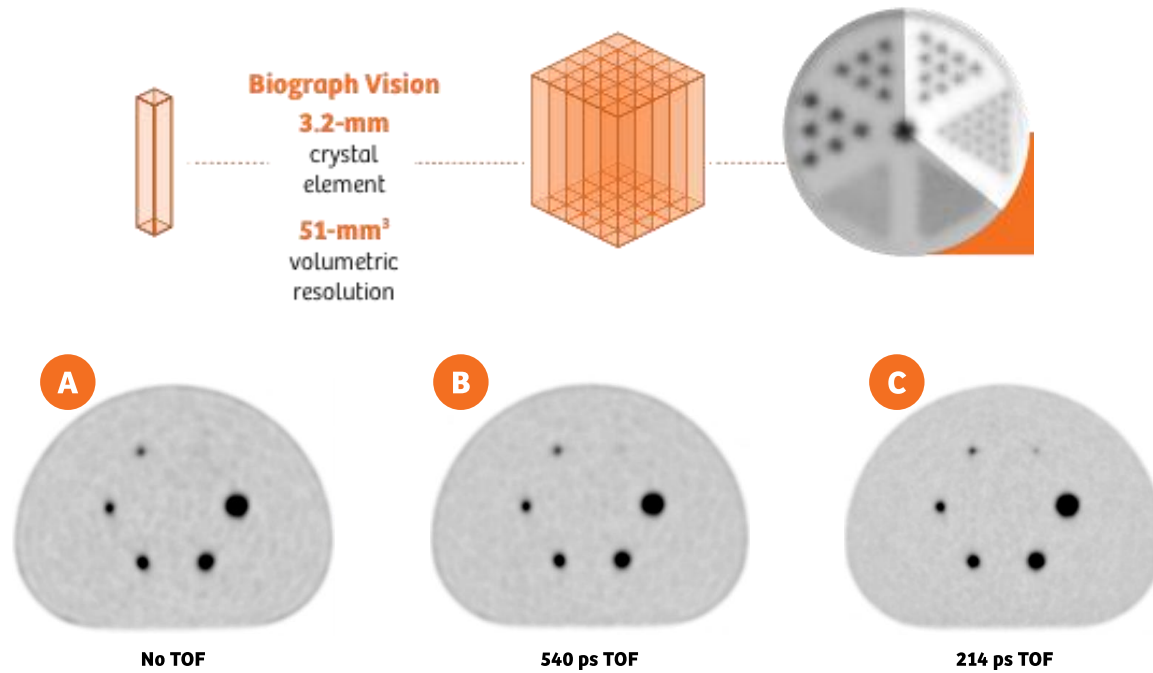
Time resolution



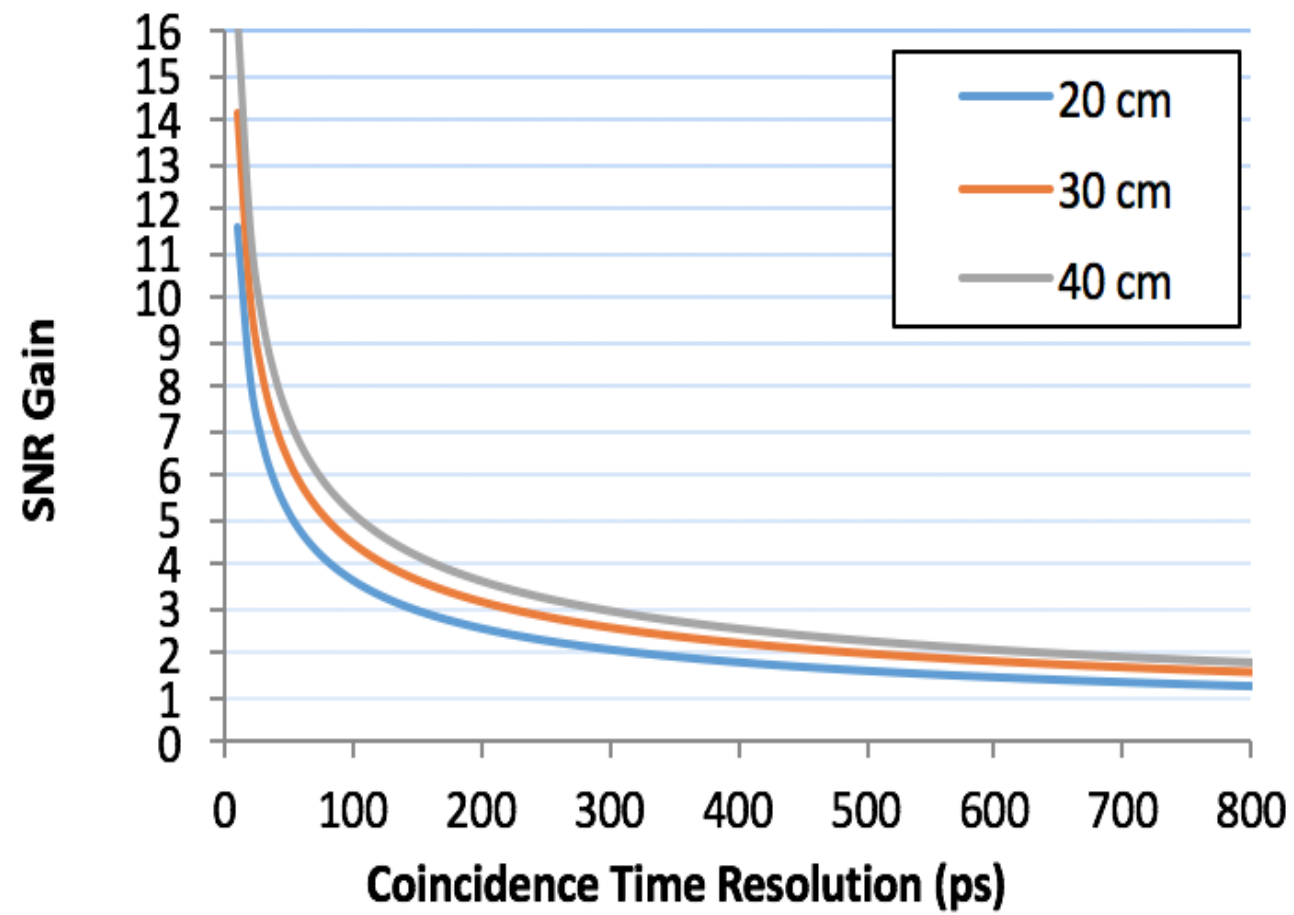
# PRINCIPLES OF TOF PET



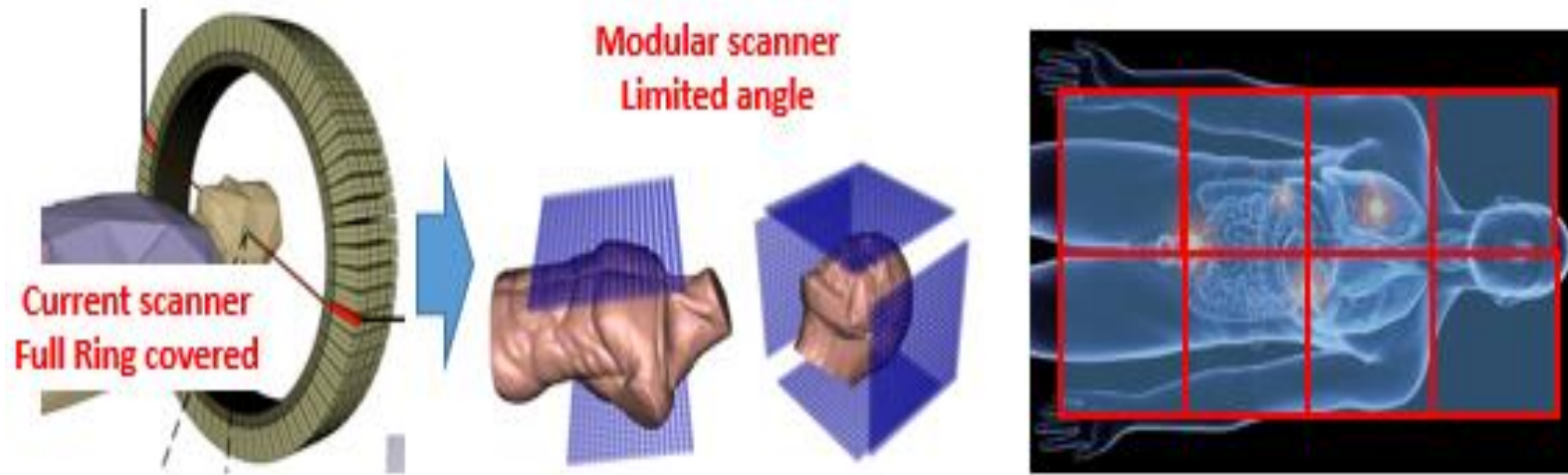
# 214ps TOF RESOLUTION



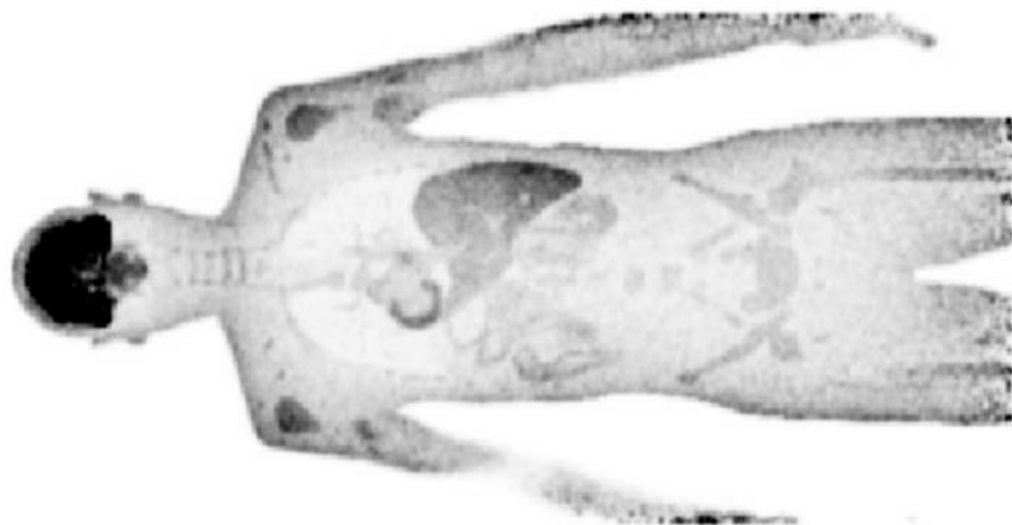
Images A and B acquired on Biograph mCT.  
Image C acquired on Biograph Vision.



# TWO LARGE PANELS WITH 75ps TOF



## SIMULATION RESULTS



Tempus Fugit  
vs  
Time Of Flight

