



Awake & unrestrained PET neuro-imaging

MADA[©] PET

Motion ADAptive PET

What is MADA[©] PET?

Motion adaptive PET imaging solution

- Allows awake and unrestrained brain PET based on **motion tracking and motion correction**.
- Integrated and easy-to-use methodology
- Minimally invasive head tracking
- Software solution no additional hardware
- Applicable for many types of μ PET scanners



Why MADA[©] PET?

Imaging typically requires **anesthesia** to avoid stress and/or motion artefacts during imaging.

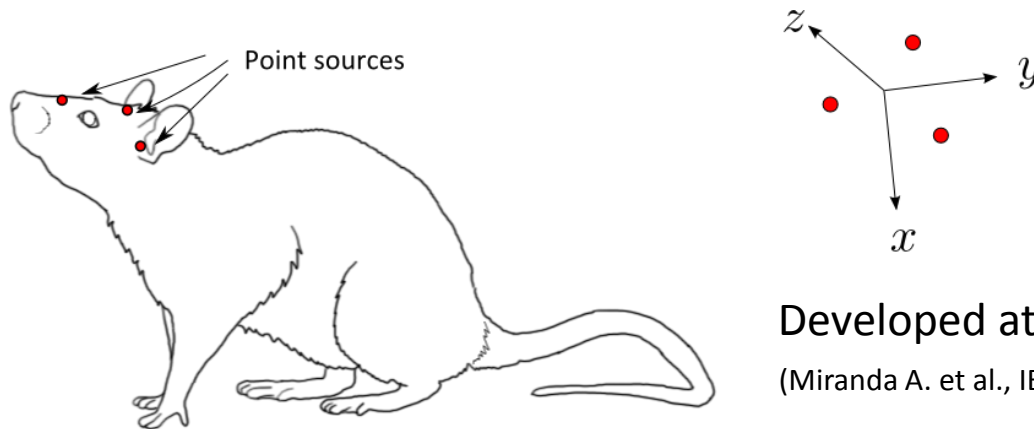
However, anesthesia may introduce **confounding effects** such as:

- influence on the normal brain physiology (e.g. perfusion)
- interaction of anesthetic with target molecules
- interaction of anesthetic with radiotracer (e.g. metabolism)
- possible interference with disease development



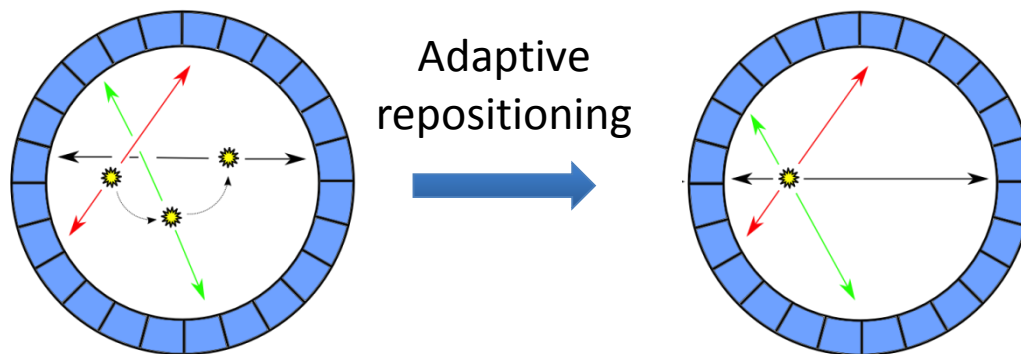
How does MADA[©] PET work?

- Point source based head tracking using PET data

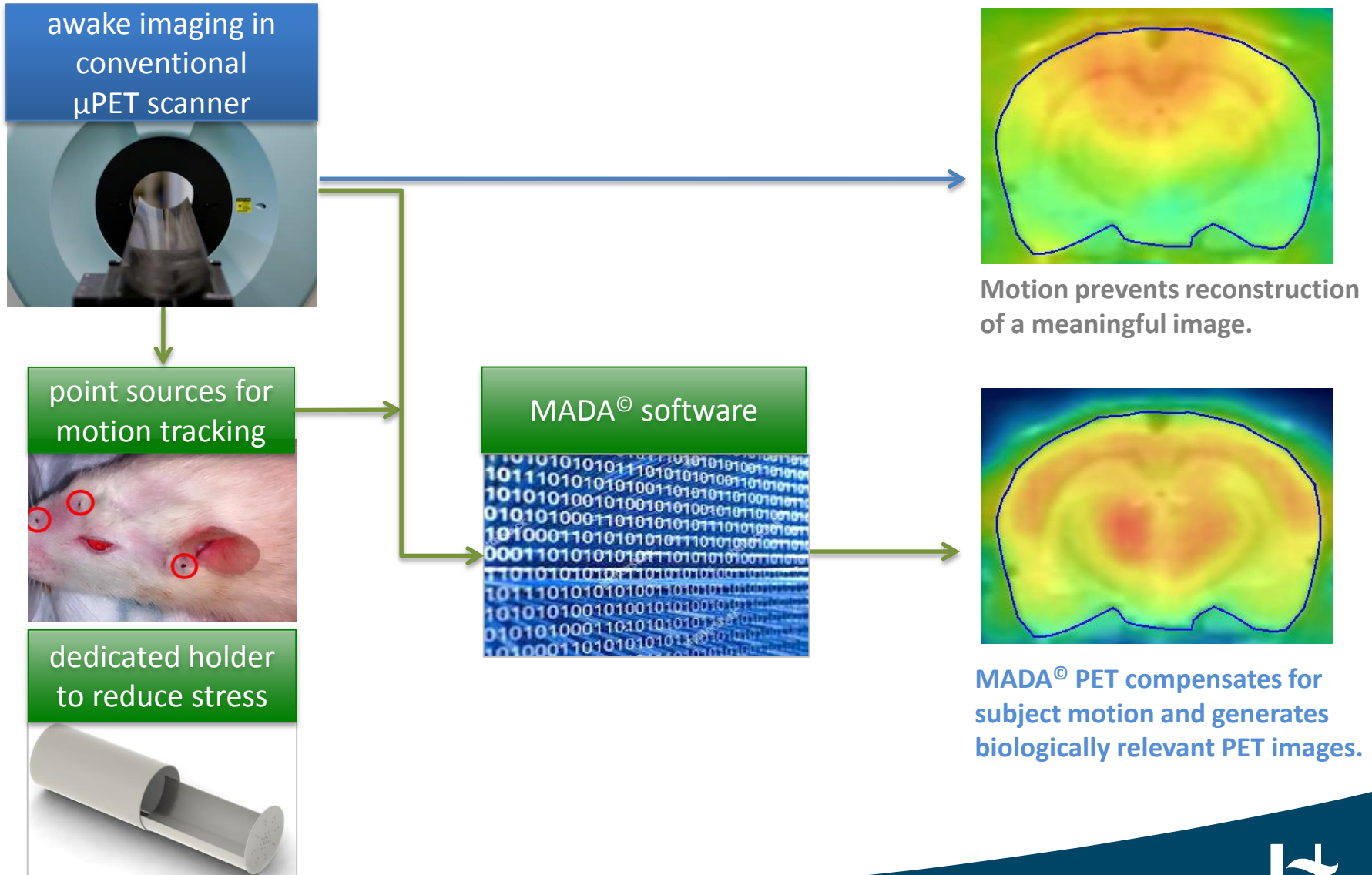


Developed at the University of Antwerp
(Miranda A. et al., IEEE MIC 2015)

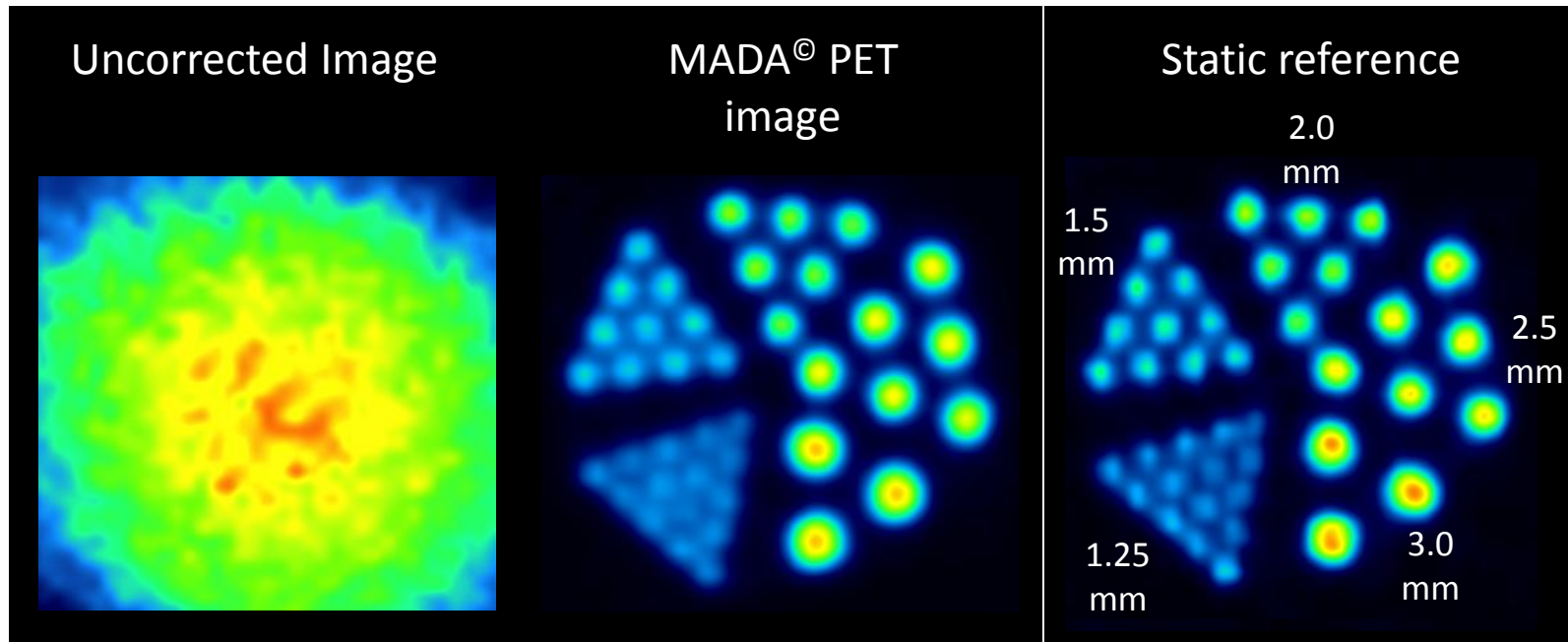
- Motion adaptive reconstruction software



How does it work in practice?



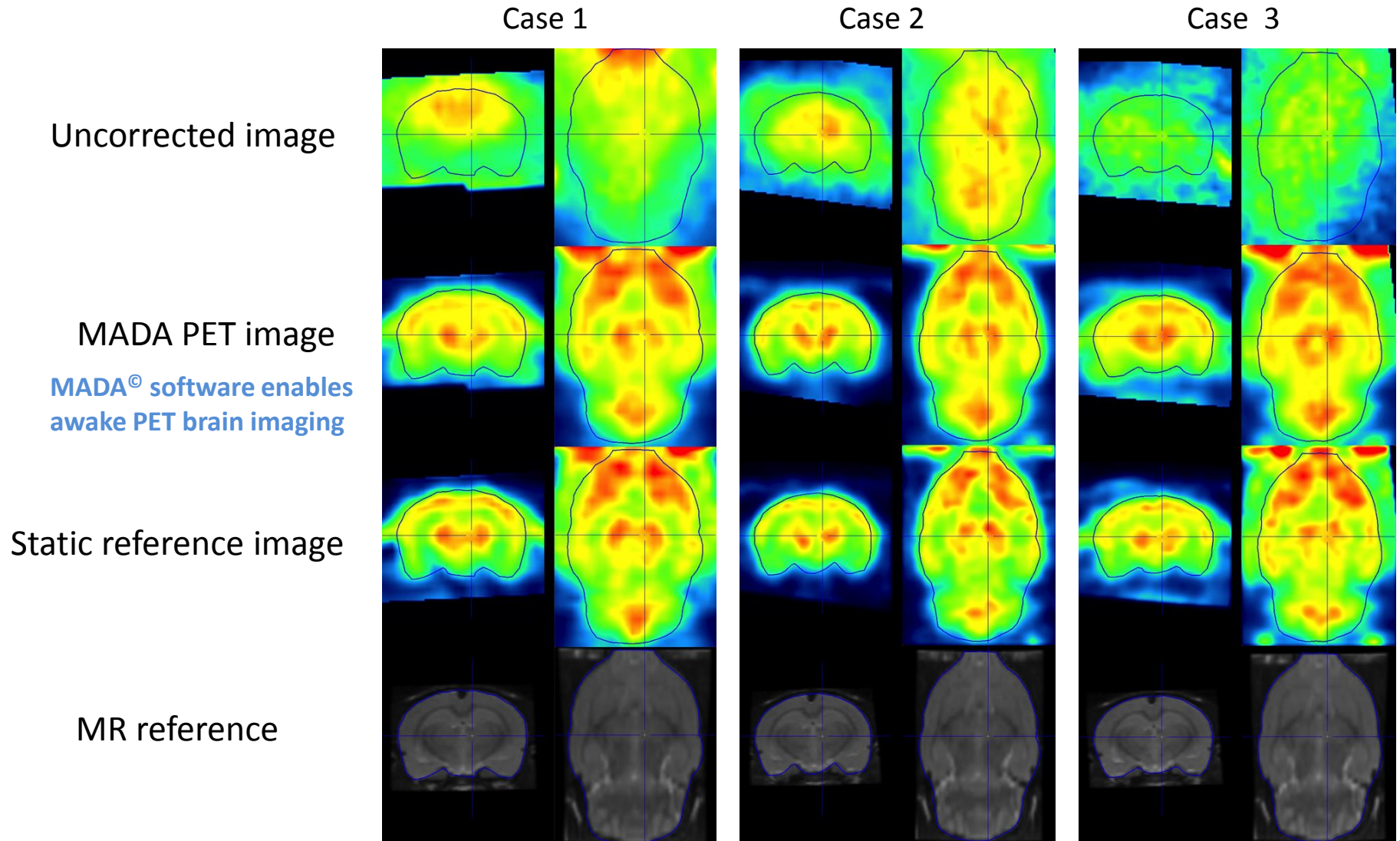
Phantom proof of principle



~ 22 MBq [¹⁸F]FDG, Siemens Inveon, 10 min scan with motion followed by 20 min static reference scan . Random motion of the phantom was introduced by attaching it to a manually controlled pole.

MADA[®] PET software compensates randomly-introduced motion of the phantom and generates very sharp images with about 1.25mm resolution.

In vivo proof of principle



~ 37 MBq [¹⁸F]FDG, Siemens Inveon, 20 min awake scan followed by 20 min static reference scan

Unique strengths of MADA PET

- ✓ Enables neuro-imaging without anesthesia
- ✓ Easy-to-use and integrated methodology
 - No additional equipment
 - No additional calibrations
- ✓ Minimally invasive
 - No large and heavy markers
- ✓ Excellent image quality

Want to collaborate?



Jeroen Verhaeghe, PhD

Associate professor

jeroen.verhaeghe@uantwerpen.be

MICA: www.uantwerpen.be/en/rg/mica/



**Molecular Imaging
Center Antwerp (MICA)**
University of Antwerp



Pieter-Jan Guns, PhD

Research and Innovation Manager EGAMI

pieter-jan.guns@uantwerpen.be

EGAMI: www.egami.be



EGAMI*image*
University of Antwerp

