ENABLING REAL-TIME RECONSTRUTION FOR HIGH INTRINSIC RESOLUTION SPECT SYSTEMS

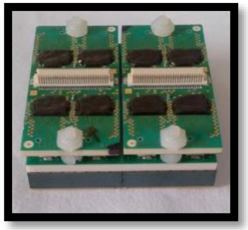
Real Time Conference 2016 | BERNARD Mélanie | 09/06/16

CONTEXT

CdZnTe Detectors

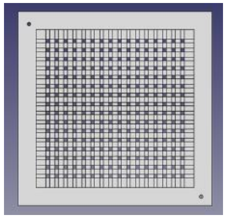
- Compactness
- Spatial Resolution : 0.3 mm
- Energetic resolution: 2.5 % at 140keV

High resolution Readout modules



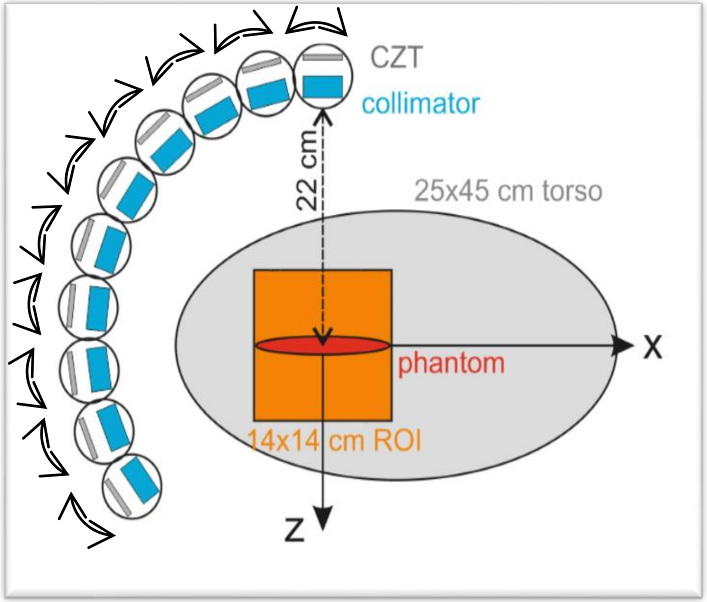
- 3D Positioning
- $128 \times 128 \times 8$ detecting voxels per module
- Four $40 \times 40 \times 5$ mm modules per head

Parallel holes collimator



- Height : 20 mm
- Collimator to detector distance : 15 mm
- Step : 2.5 mm
- Septa width : 1 mm

Adaptative System



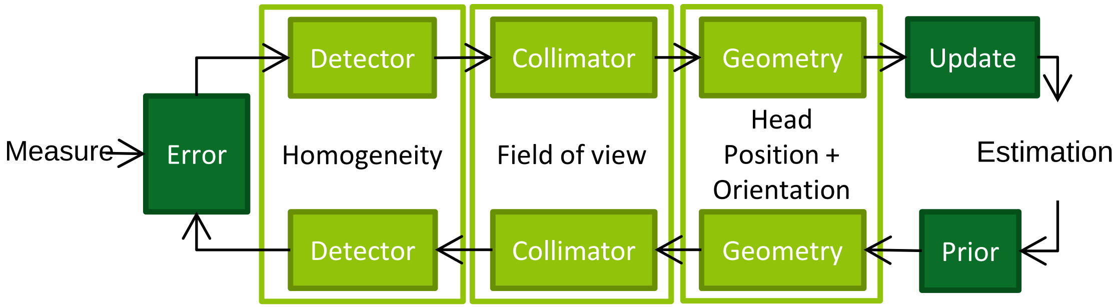
Adaptation of head position during the examination

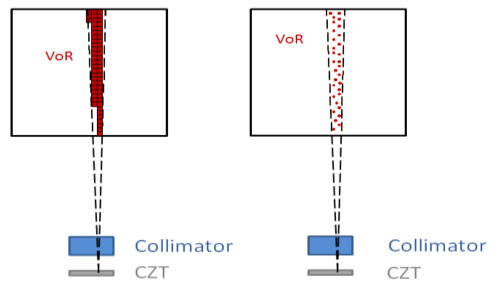
→ **Real-time Computing**

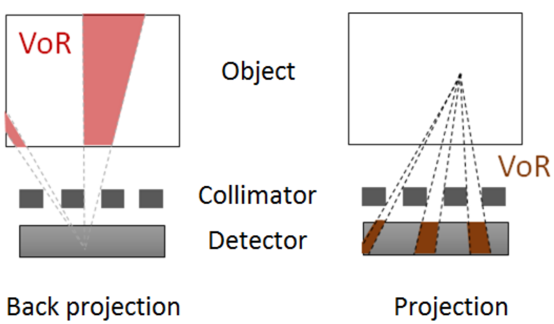
IMPLEMENTATION TECHNIQUES FOR MLEM RECONSTRUCTION

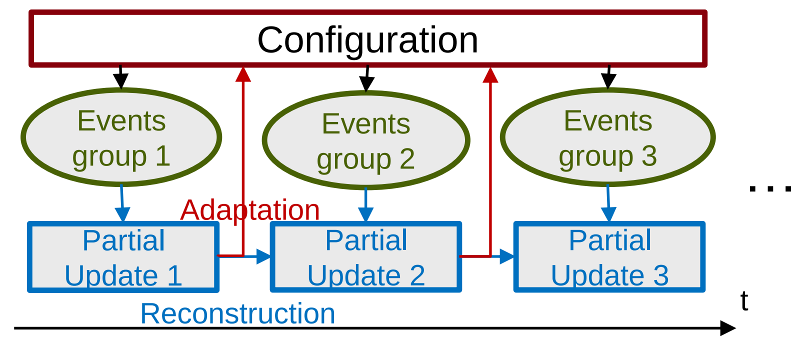
- **Exact implementation techniques**
  - Decomposition of the model
  - List-mode processing
  - Ray-tracing

- **Non-exact implementation techniques**
  - Monte-Carlo Back projections
  - Partial updates



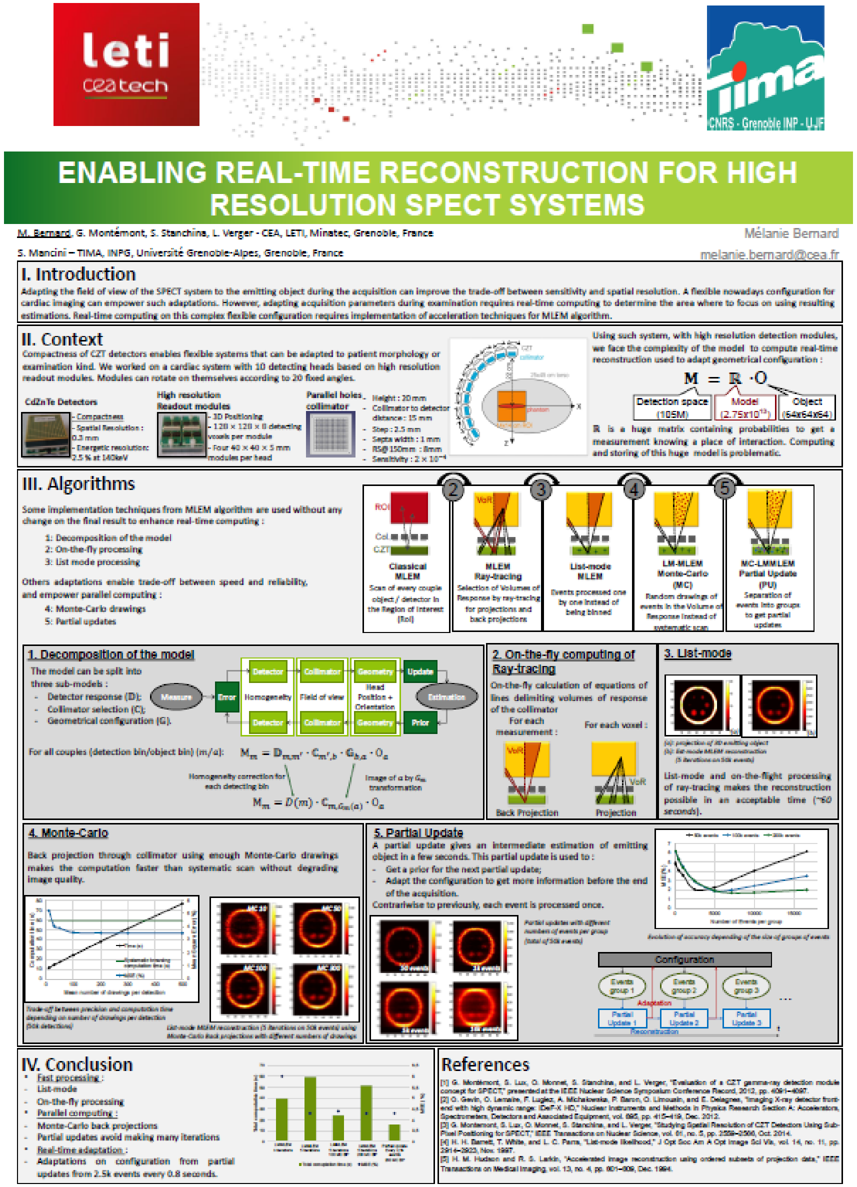






Parallel computing

THANK YOU FOR YOUR ATTENTION



- Poster session 1