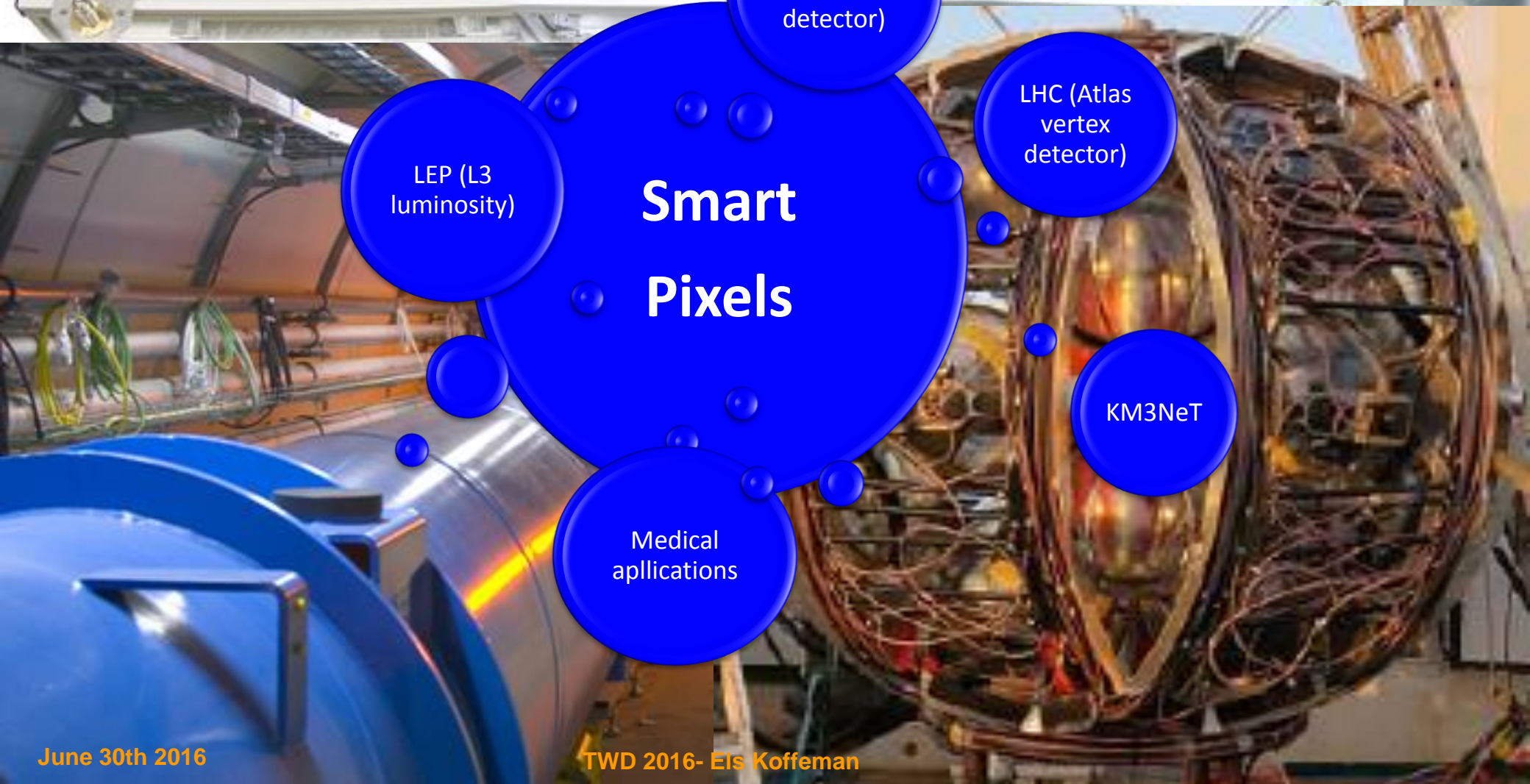




HERA (ZEUS
vertex
detector)



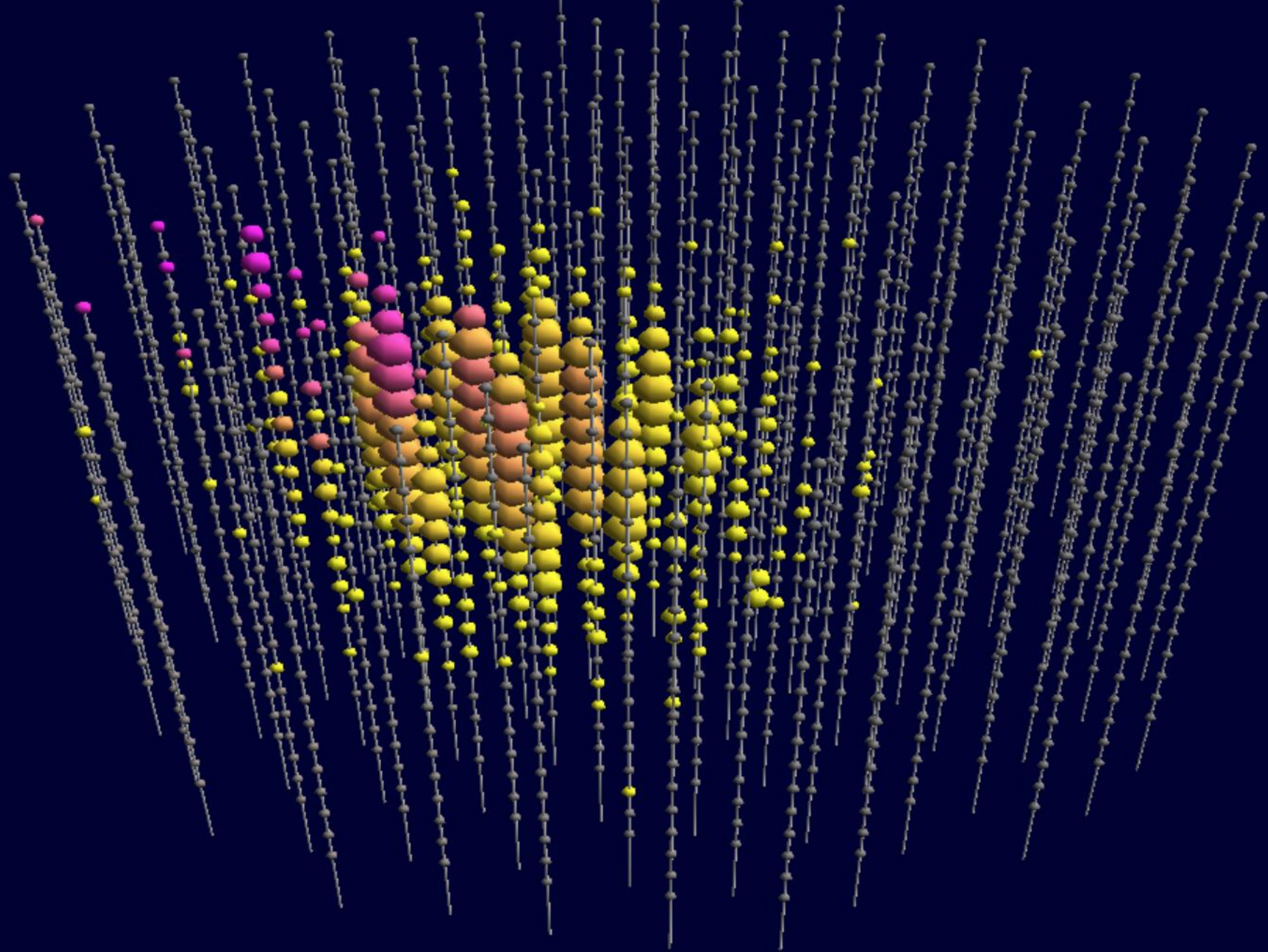
LEP (L3
luminosity)

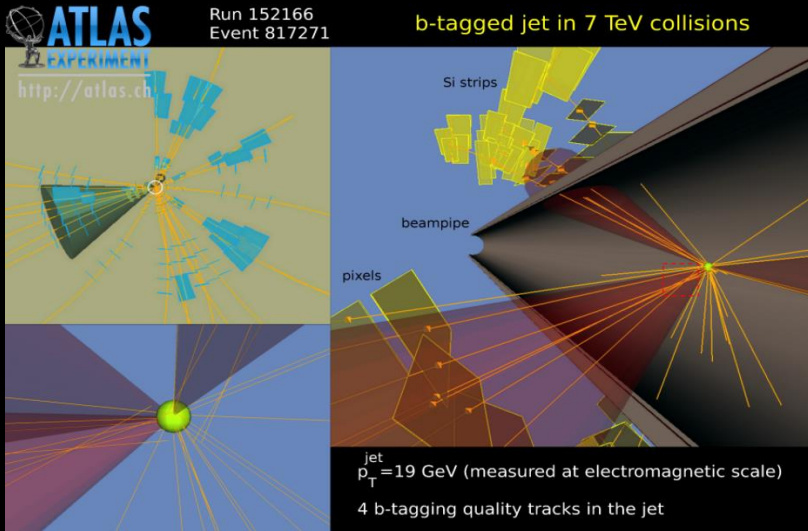
Smart Pixels

LHC (Atlas
vertex
detector)

KM3NeT

Medical
applications





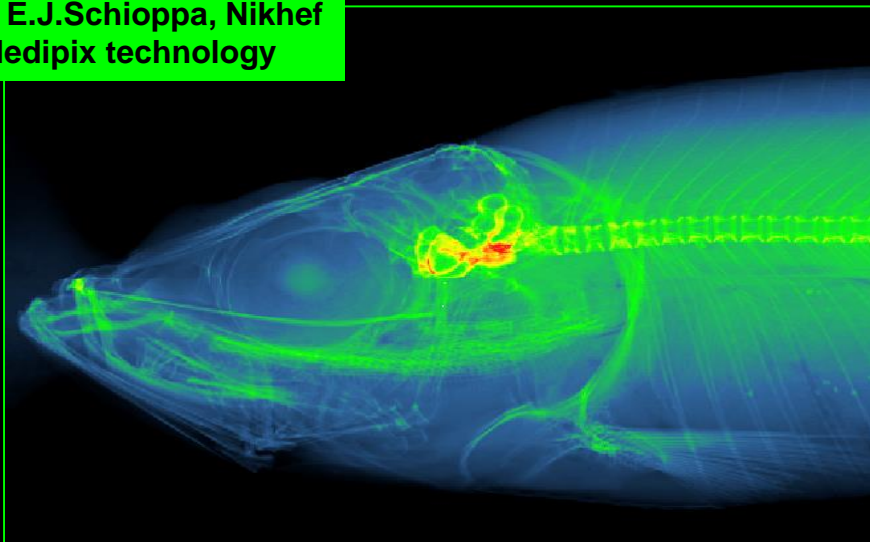
• LHC particle tracking

1. Collision rate 40 MHz
2. Record interaction with slice of silicon
3. reconstruct data => image event

PHD E.J.Schioppa, Nikhef
Medipix technology

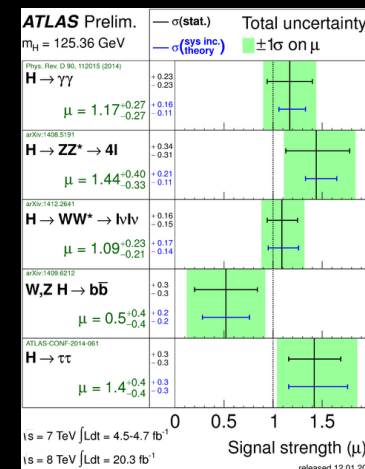
1. X-ray CT

1. 10^7 particles $\text{mm}^{-2} \text{s}^{-1}$
2. Record interaction with slice of silicon (or high Z material)
3. Filter data => reconstruct phantom



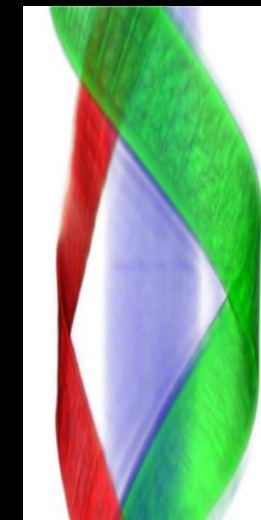
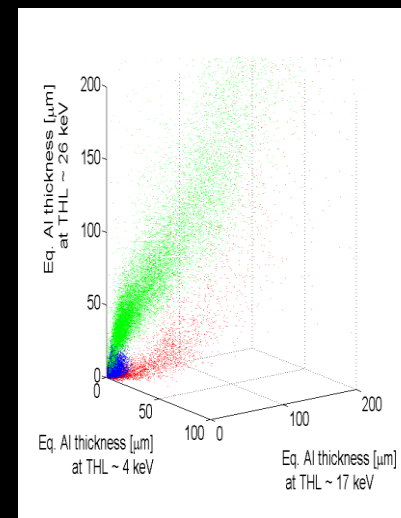
- **PARTICLE PHYSICS**

- 3 YEARS OF LHC DATA REVEALED ELECTROWEAK SYMMETRY BREAKING WITH HIGGS MECHANISM AND ASSOCIATED **HIGGS PARTICLE OF 125.36 GEV**



- **(MEDICAL) XRAY CT RECONSTRUCTION**

- Develop Quantative Analysis
- Real time reconstruction
- Use sparse & adaptive scanning



- **Wishlist (2-3 yrs): Quantative Spectral CT**
 - Based on our workhorse (still alive!) Medipix3RX with fast readout (SPIDR)
 - Planned **FlexRay** demonstrator at Science Park Amsterdam
(collaboration proposal by Nikhef, CWI Center of mathematic & informatics, XRE, ASI)
- **Dream (~10 years): Real time CT color video**
 - Record Material, Movement, 3D model => extract diagnosis
 - Our Workhorse.... Medipix or Timepix five or six? → **FixPix**
 - Imagine: Patient walks through a scanner and knee or hip protheses is printed on the way out

Be careful what you wish for.....



Interpretated from a dutch novel written in 1967 by W.F. Hermans.
“wonderkind of een total loss”. Short story “Hundertwasser, 165 and more” the main character at his 165th birthday reflects:

“...Every five years my eyes are replaced.

It is a petty there is nothing I can see apart from the white ceiling since I did not get out of bed since 25 years....”