

# Measurement of anomalies in the angular correlation of electron and positron internally produced in excited $^8\text{Be}$ and $^4\text{He}$

A.F.V. Cortez | H. Natal da Luz | R. Sykora | B. Ali | L. Fajt

Construction of a spectrometer for the tracking and measurement of the energy of light charged particles.

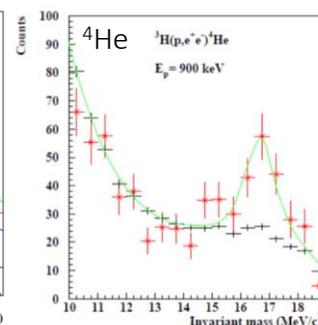
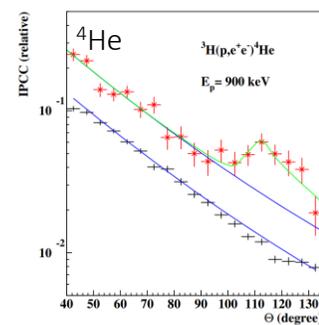
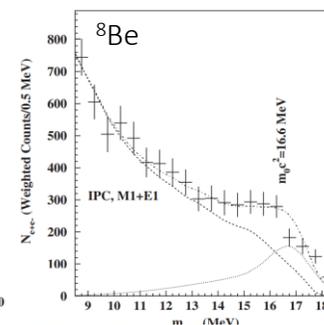
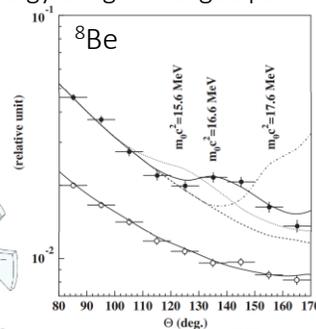
The spectrometer is formed by:

- Hexagon Timepix3
- Multi-Wire Proportional Chamber
- Time Projection Chamber

Setup in construction @ IEAP's Van de Graaff facility.

## $^8\text{Be}$ decay

- Hadronic ( $\approx 100\%$ )
- Electromagnetic ( $\approx 1.5 \times 10^{-5}$ )
- Internal Pair Creation ( $\approx 5.5 \times 10^{-8}$ )



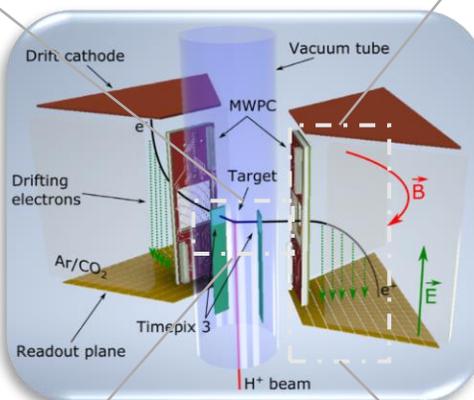
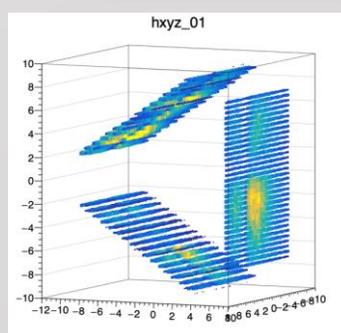
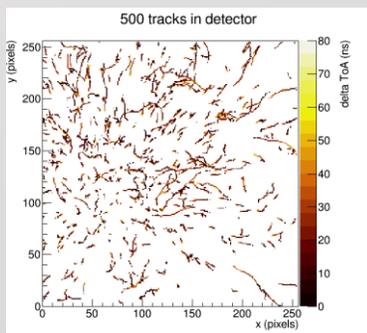
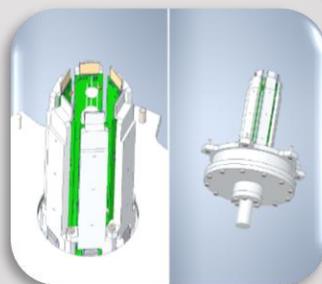
André Cortez



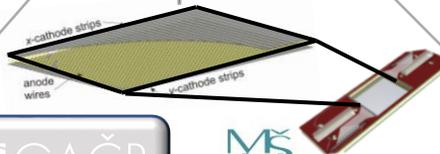
IEAP CTU in Prague

## Hexagon Timepix3

- Event driven pixelated detector (fast response);
- 256x256 55  $\mu\text{m}$  pixels (high granularity);
- 1.6 ns time resolution;
- 14x14 mm<sup>2</sup> (fits inside the vacuum tube).
- Designed in collaboration with FEE-UWB.



## Multi-Wire Proportional Chamber

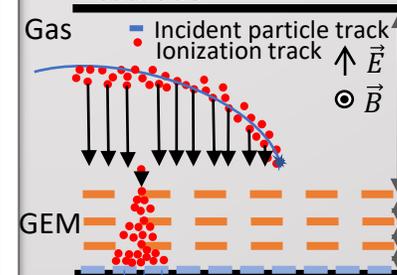


## Time Projection Chamber

- 3D tracking (event topology)
- Particle ID
- Background rejection



## Cathode



Readout pad plane

- 10x10 cm<sup>2</sup> sensitive area;
- 8 cm drift volume;
- Standard triple-GEM;
- 120 pad readout (independently-read);
- SAMPA integration in SRS (RD51/CERN).

