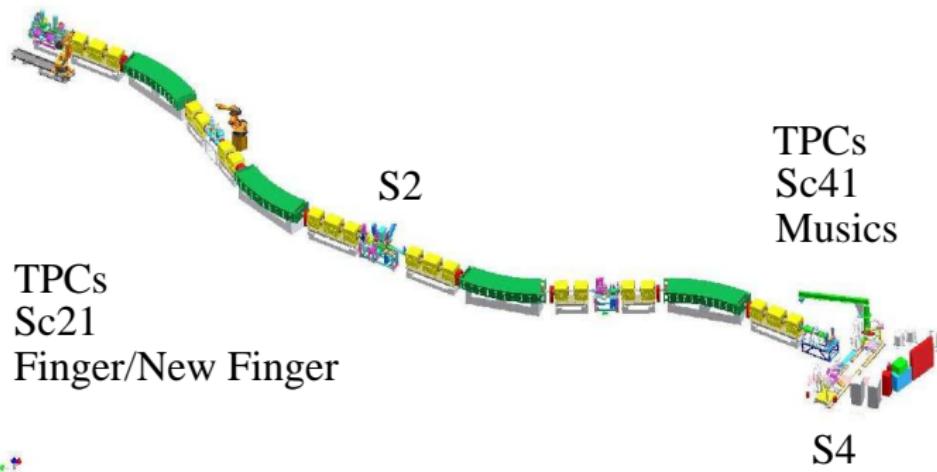


# RIB identification and tracking in Prespec-AGATA

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June 2014

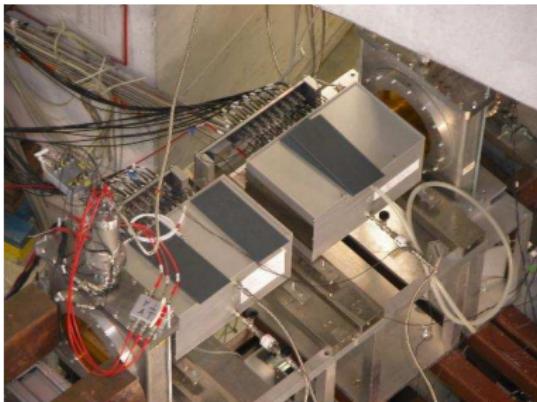
# The Fragment Separator of GSI



$$\frac{A}{Q} = \frac{B\rho e}{uc\gamma\beta}$$

$$Z = Z_p \sqrt{\frac{\Delta E}{f(\beta)}}$$

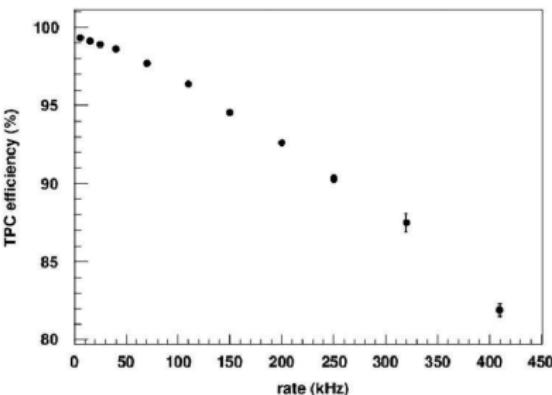
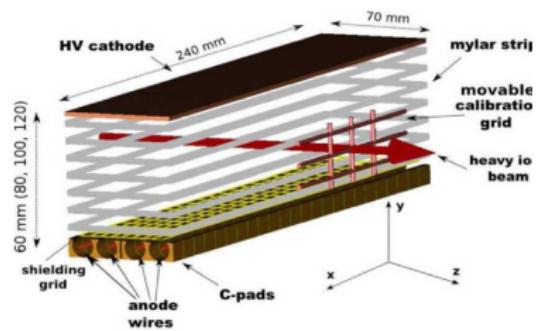
# Musics



- ▶ Multiple sampling ionisation chamber
- ▶ High rates: Pile-up leads to wrong id
- ▶ 8 anodes and a vertical drift of 80 mm
- ▶ Drift with P and T
- ▶ Measure up to U

[http://www-wnt.gsi.de/frs/technical/FRSsetup/detectors/music80/music80\\_manual.pdf](http://www-wnt.gsi.de/frs/technical/FRSsetup/detectors/music80/music80_manual.pdf)

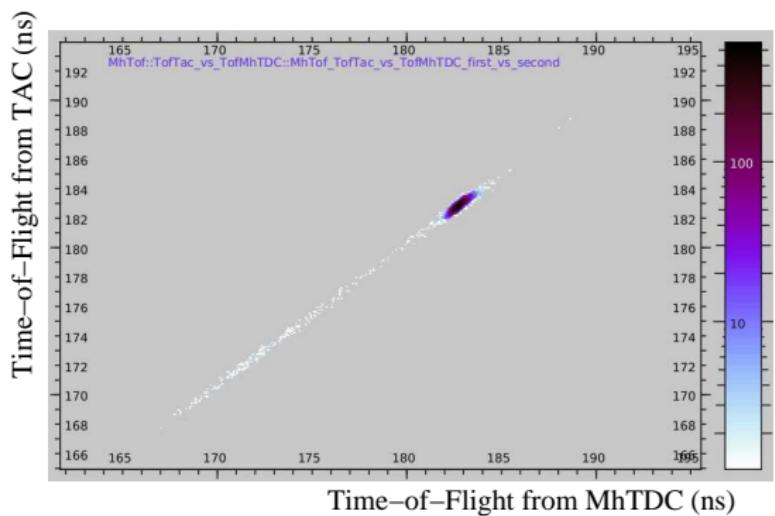
# TPCs



- ▶ Voltage: up to 400 V/cm
- ▶ 4 y and 2 x measurements
- ▶ x-resolution  $\approx$  0.18 mm
- ▶ y-resolution  $\approx$  0.08 mm

<http://www-wnt.gsi.de/frs/technical/FRSsetup/detectors/tpc/tpcmanual.pdf>

## Standard FRS scintillators



- ▶ Max count rate:  $10^6$  pps
- ▶ Possibility to get position

## Finger detector

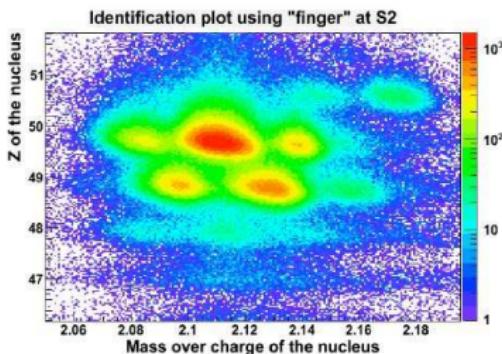
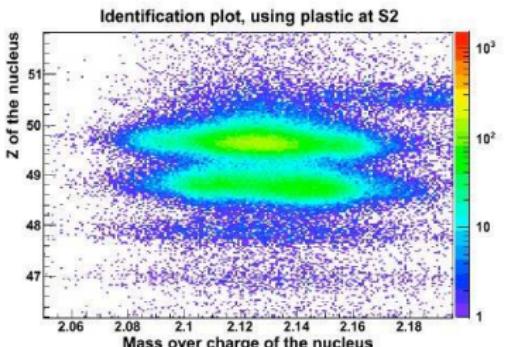


- ▶ Material: BC420
- ▶ 15 strips: 13 mm x 80 mm x 1 mm
- ▶ Stands high rate
- ▶ Charge used to select the proper hit

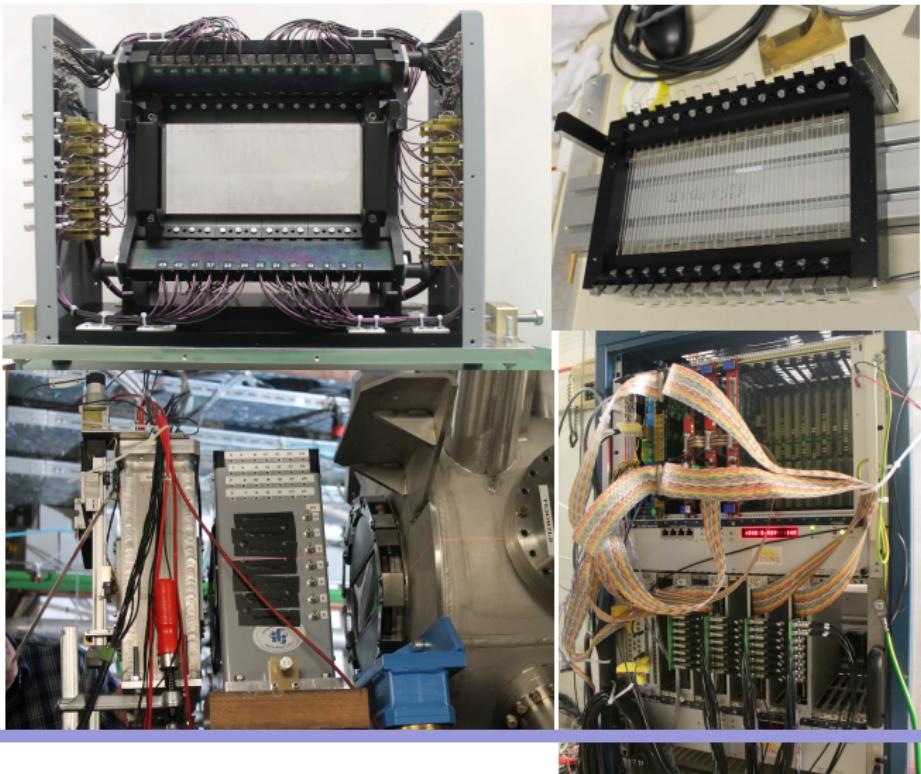
## Readout electronics for the Finger detector

- ▶ 16 PMTs
- ▶ Charge measured with a QDC
- ▶ Time obtained with CFDs
- ▶ Timing signals go to a MhTDC

[F. Ameil, *et. al.* GSI Scientific Report 2011 (2012)171]

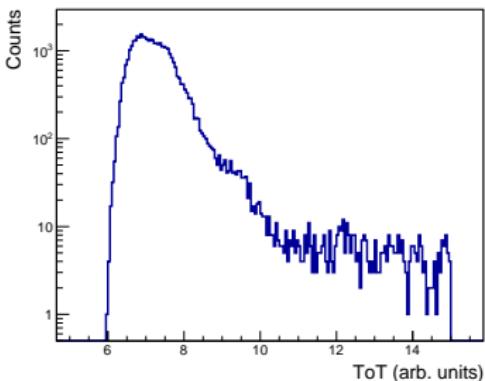


## New Finger detector



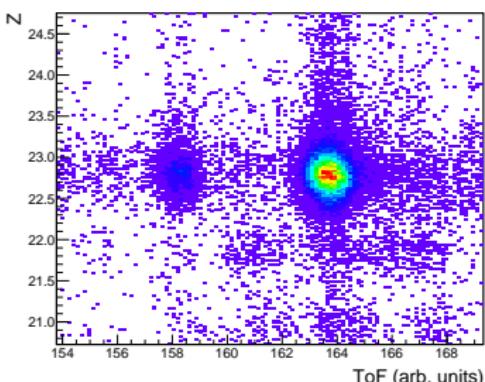
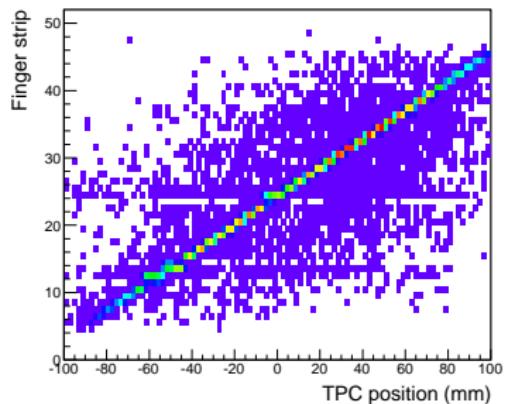
# Readout electronics for the New Finger detector

- ▶ 52 PMTs
  - ▶ LANDFEE discriminators used
  - ▶ Time and ToT measured in a MhTDC
  - ▶ Remote control for the thresholds and the voltages



M.L.Cortés et. al. GSI Scientific Report 2013.

## Some preliminary results



M.L.Cortés et. al. GSI Scientific Report 2013.

## FRS detectors

- ▶ Operation rates of tracking detectors
  - ▶ TPC : a few  $10^5$
  - ▶ MUSIC :  $10^5$
  - ▶ Scintillator:  $10^6$
- ▶ Finger and New Finger placed to stand higher rates

# ThankYou