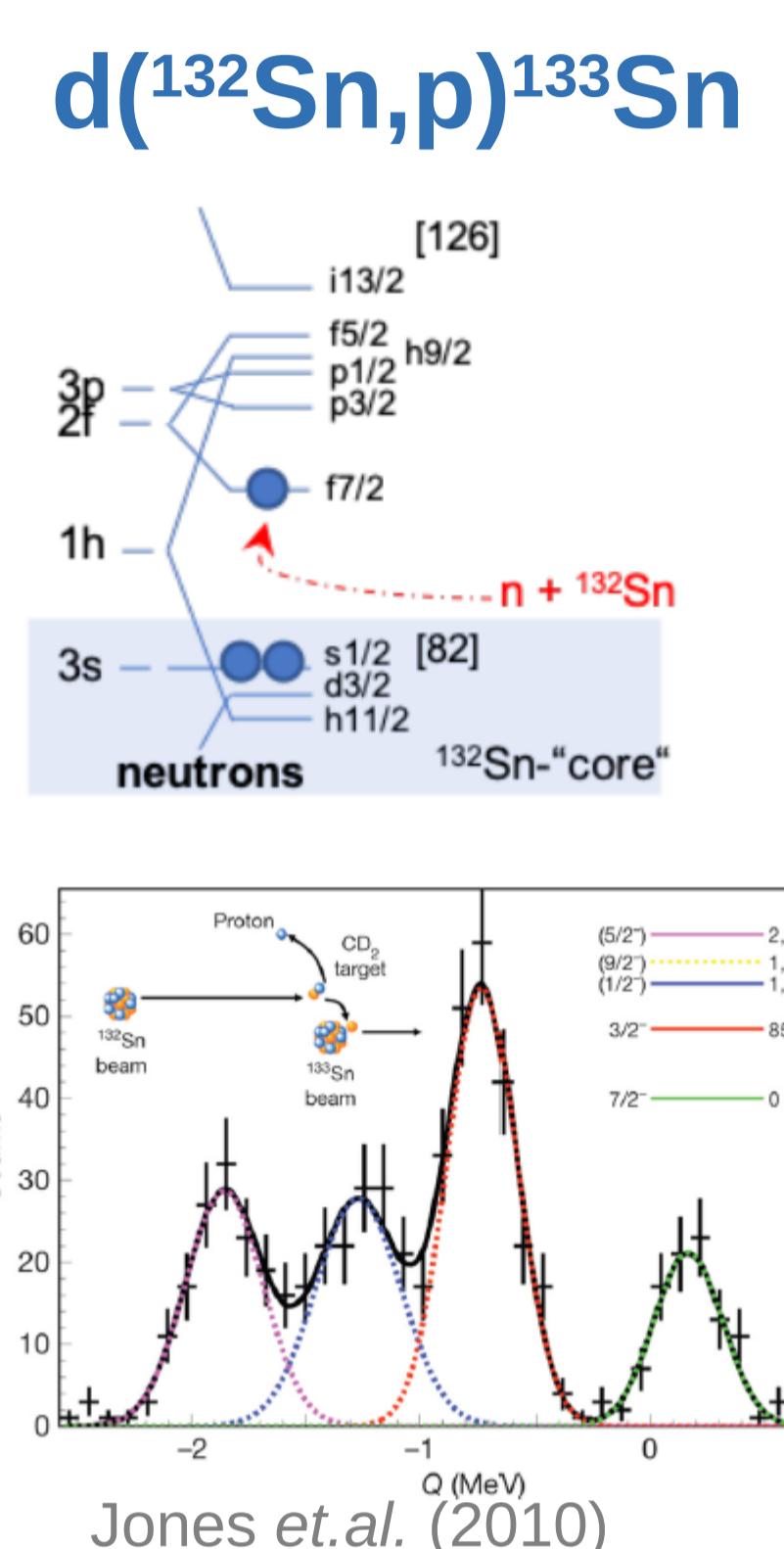
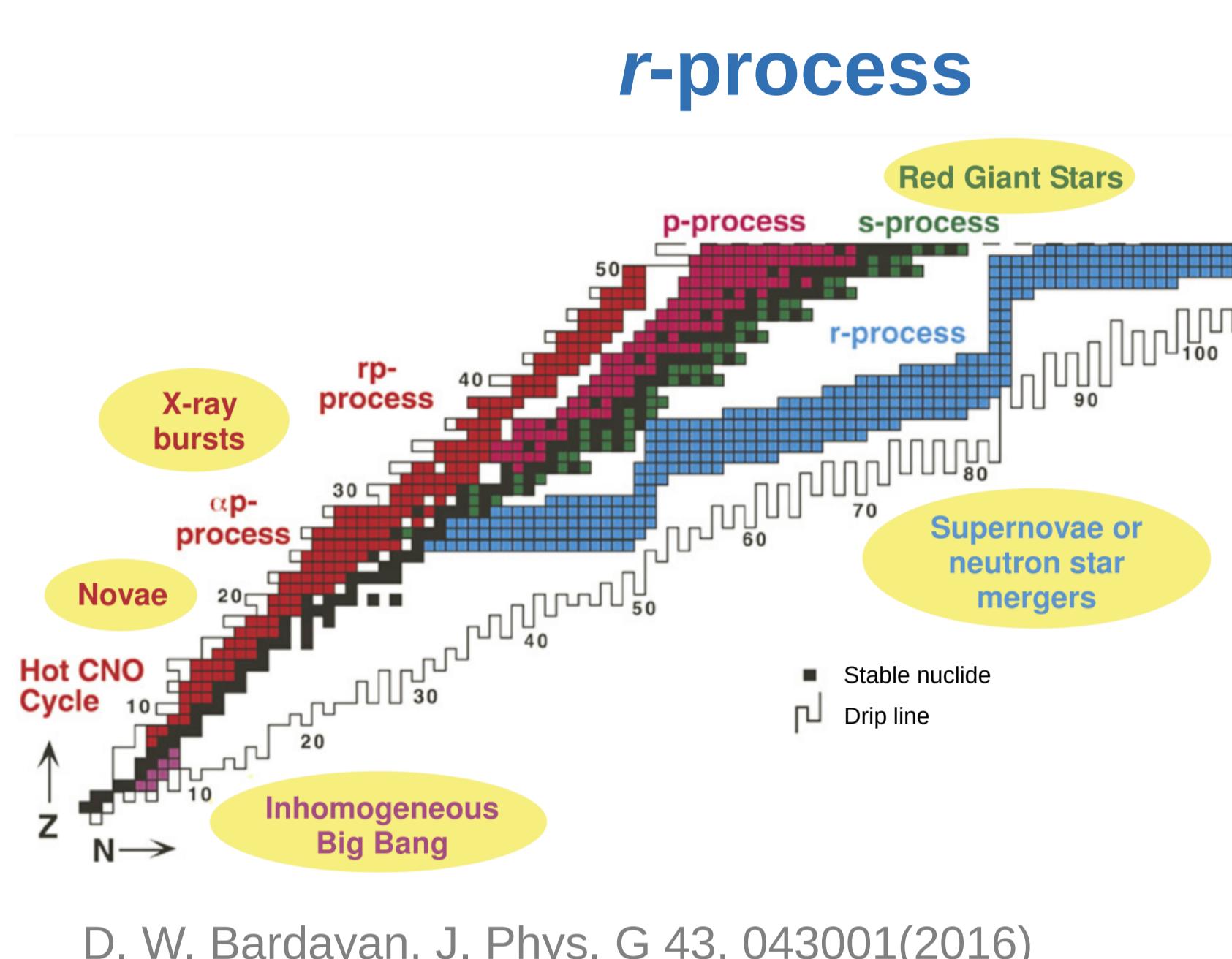


HI-TREX: Compact, high resolution particle detection system for HIE-ISOLDE

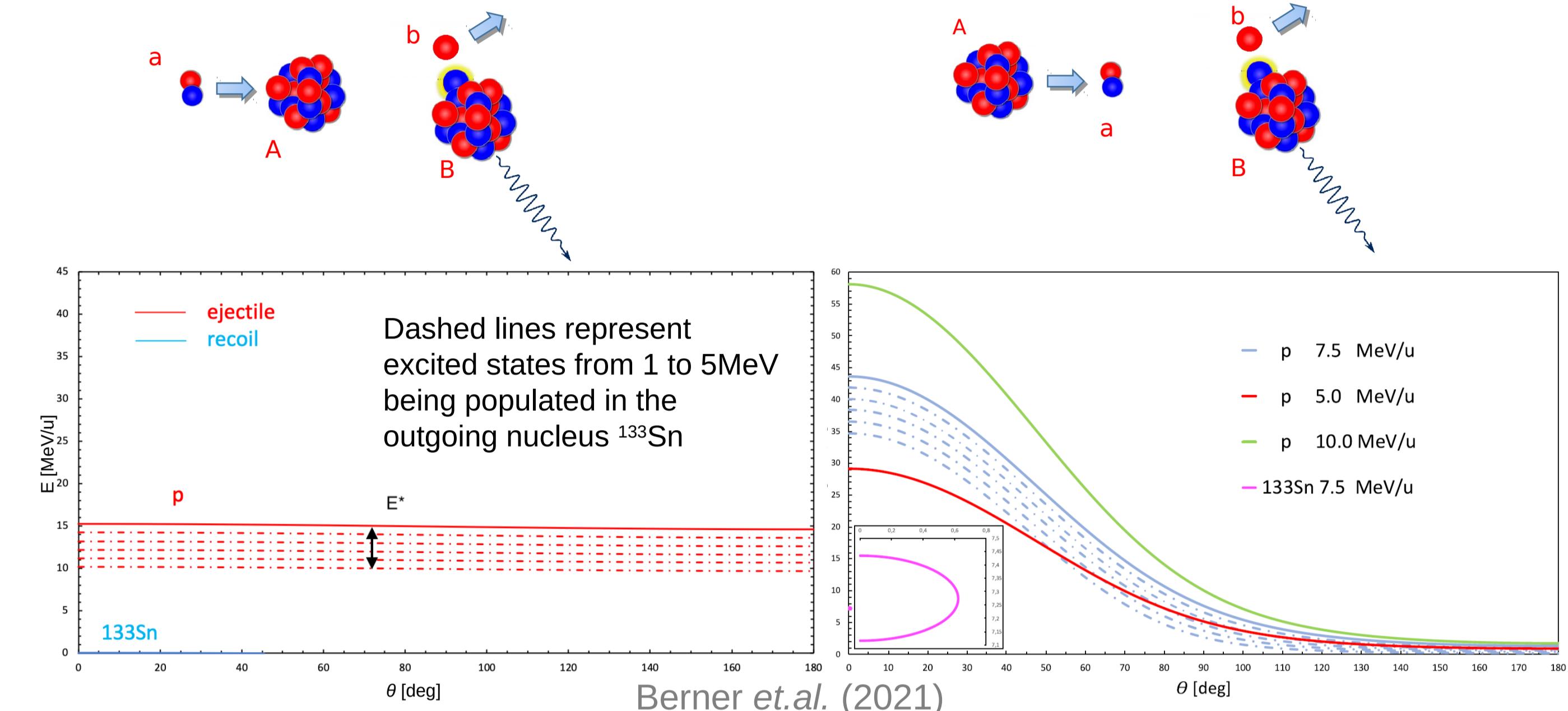
S. Golenev, R. Gernhäuser, R. Neagu for the MINIBALL collaboration

TUM School of Natural Sciences, Physics Department, E62, Technical University of Munich, Garching, Germany

Transfer reactions in inverse kinematics

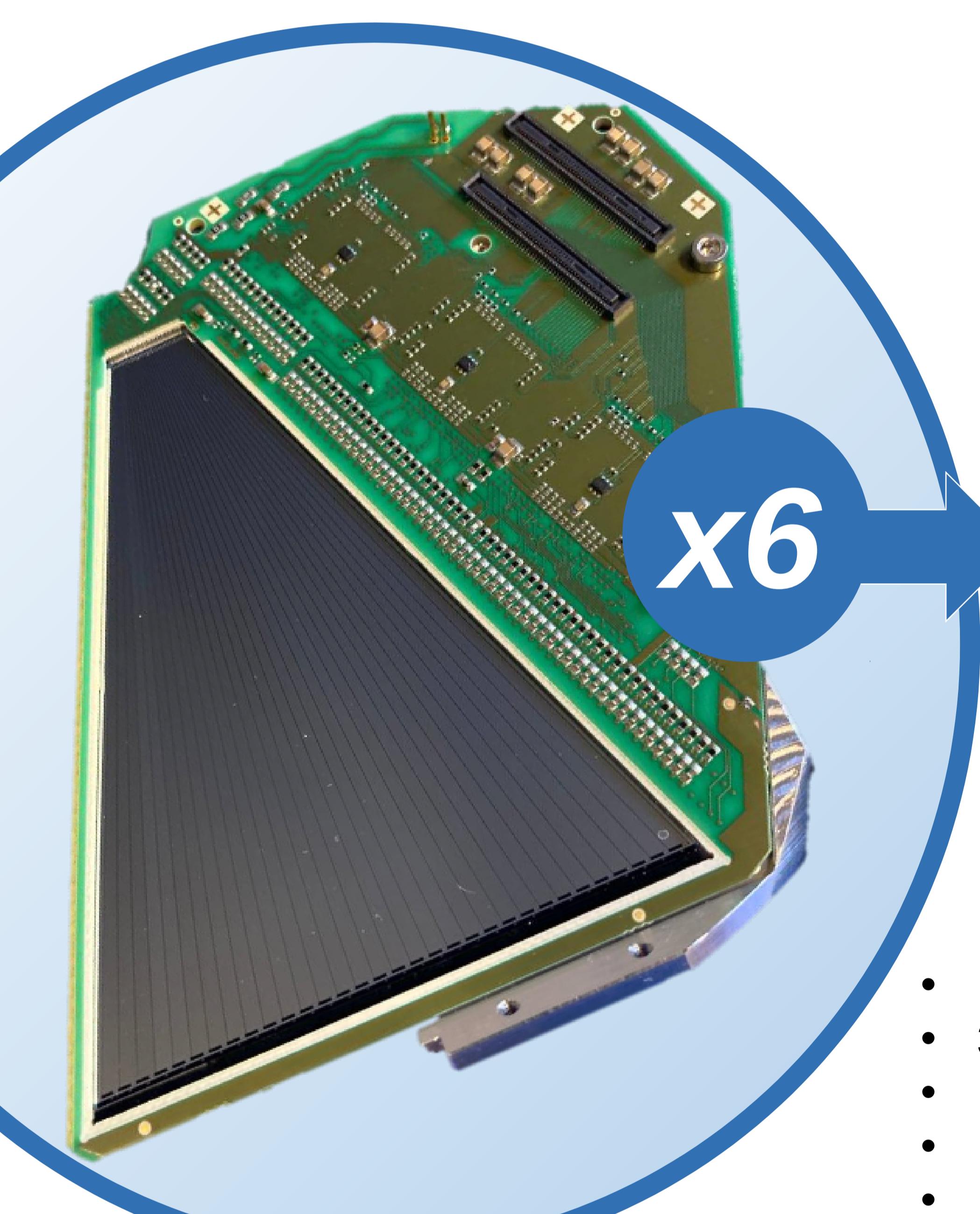


Normal kinematics vs inverse kinematics

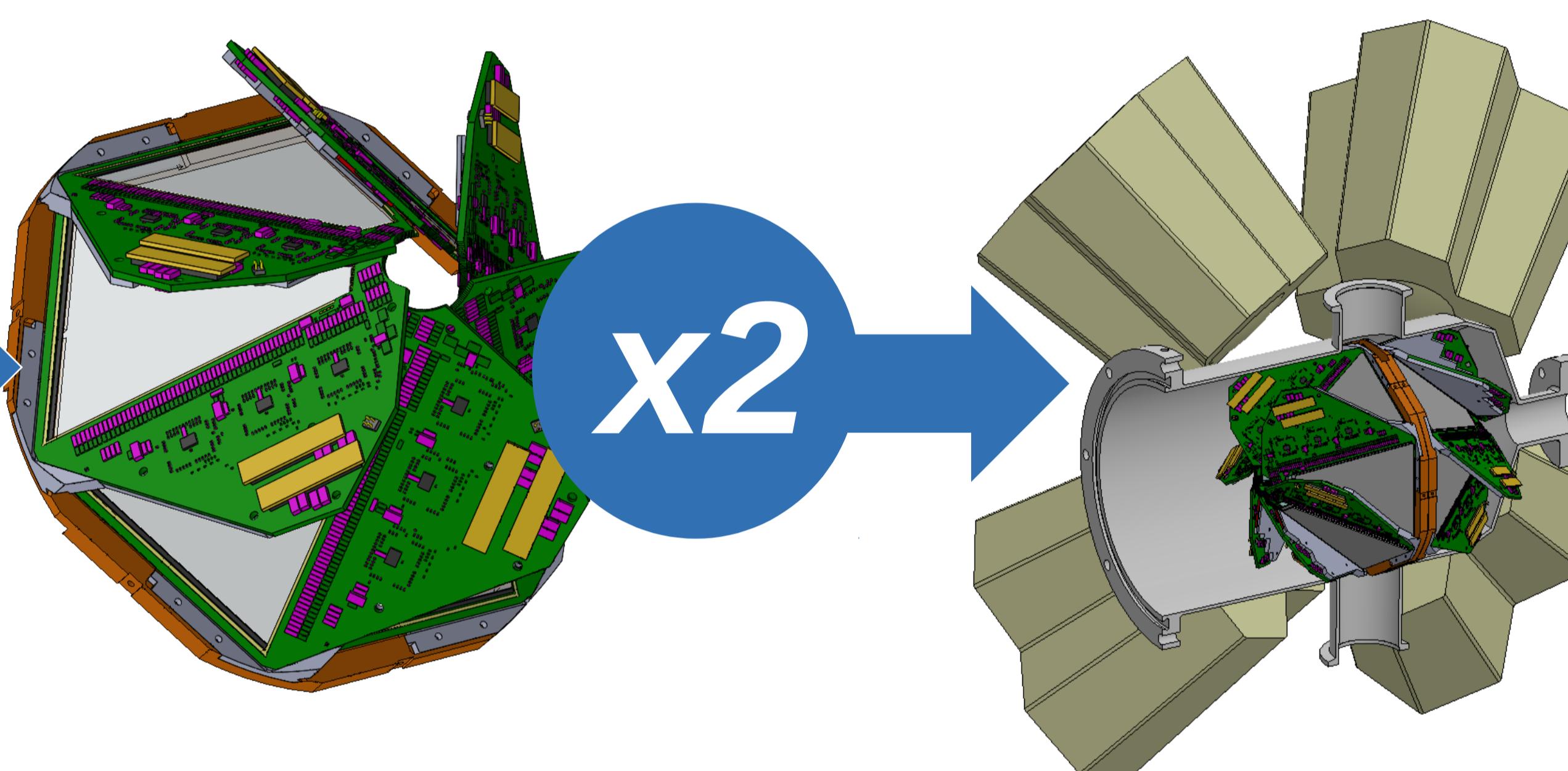


From **two-body kinematics** by measuring energy and angular distribution of the ejected proton we can get a spectrum of the populated excited states

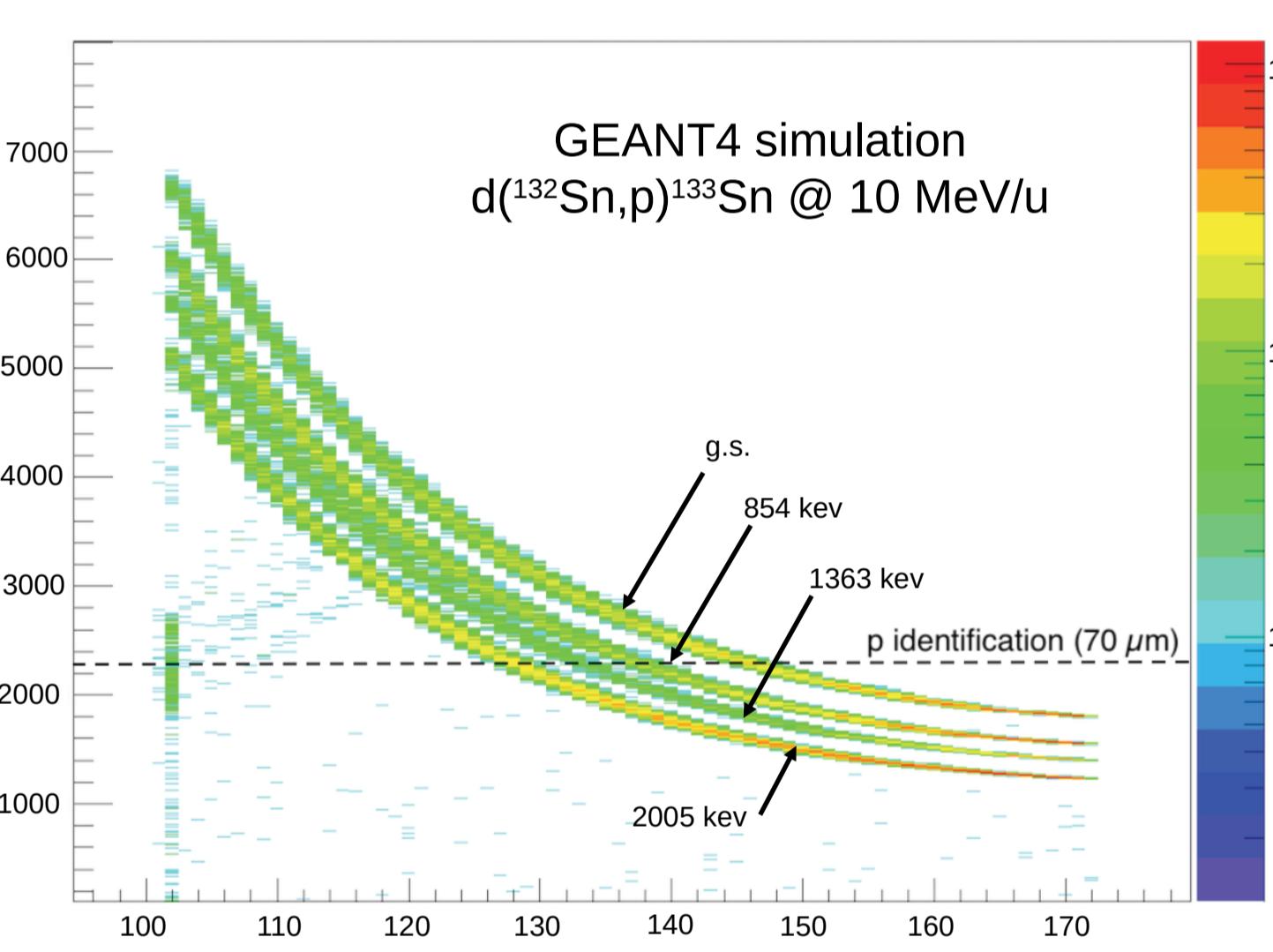
Highly Integrated setup for Transfer: HI-TREX



x6

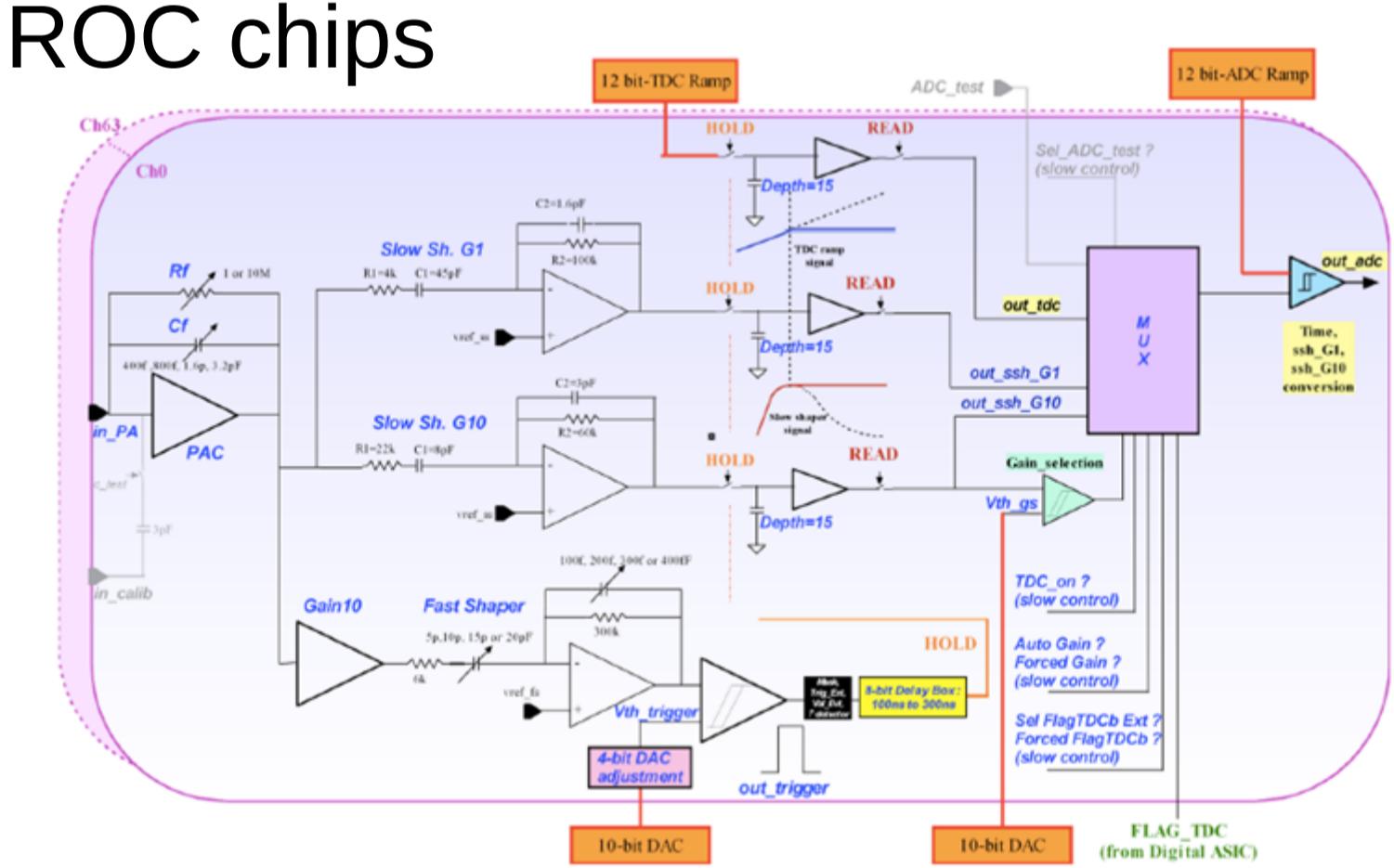


x2

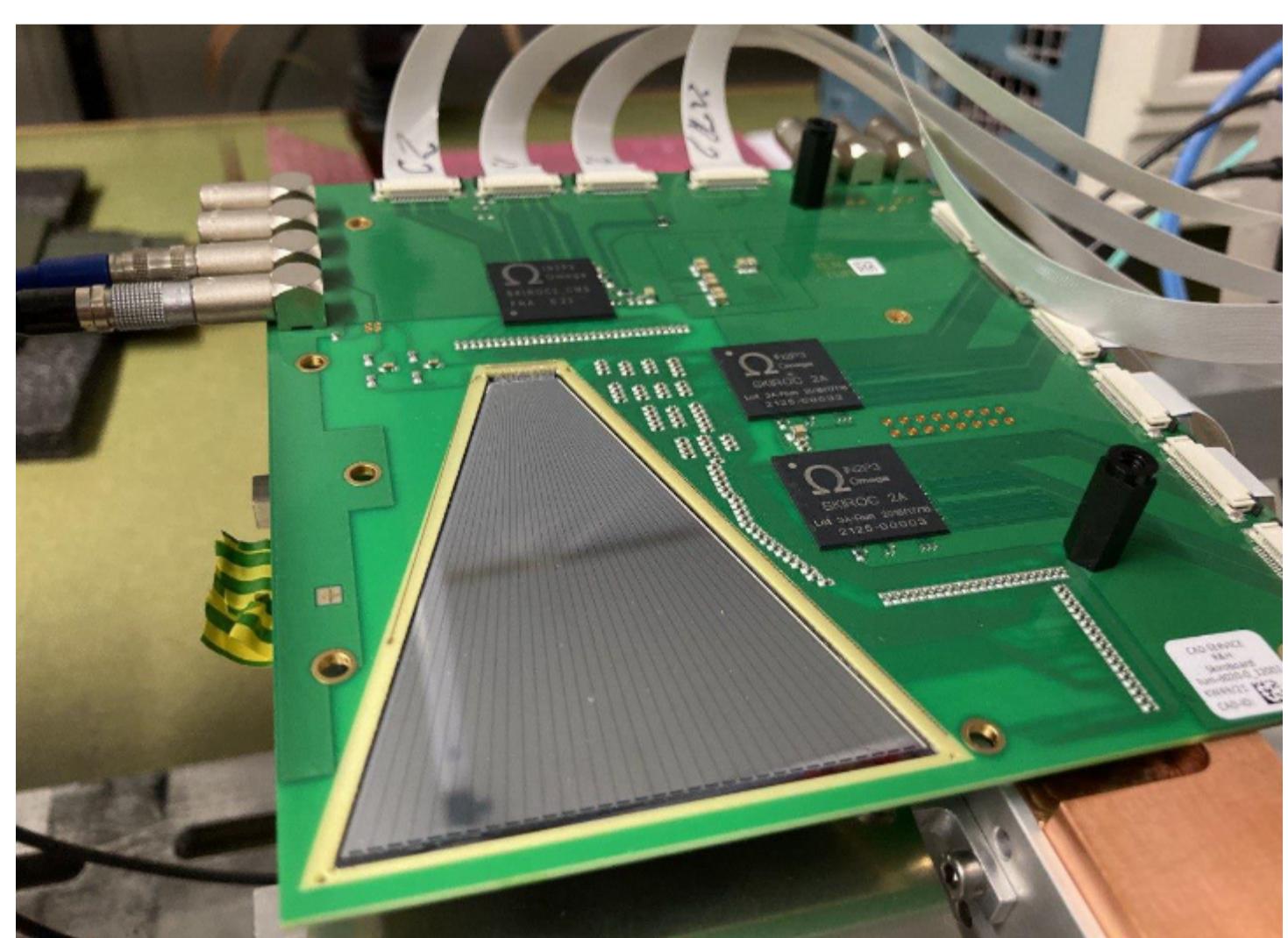


Low-noise ASIC readout – SKIROC chips

- Large geometric coverage
- 3-layer particle identification
- 150 μ m thin ΔE detector
- High polar segmentation (θ)
- 126x32 channels



Experimental data

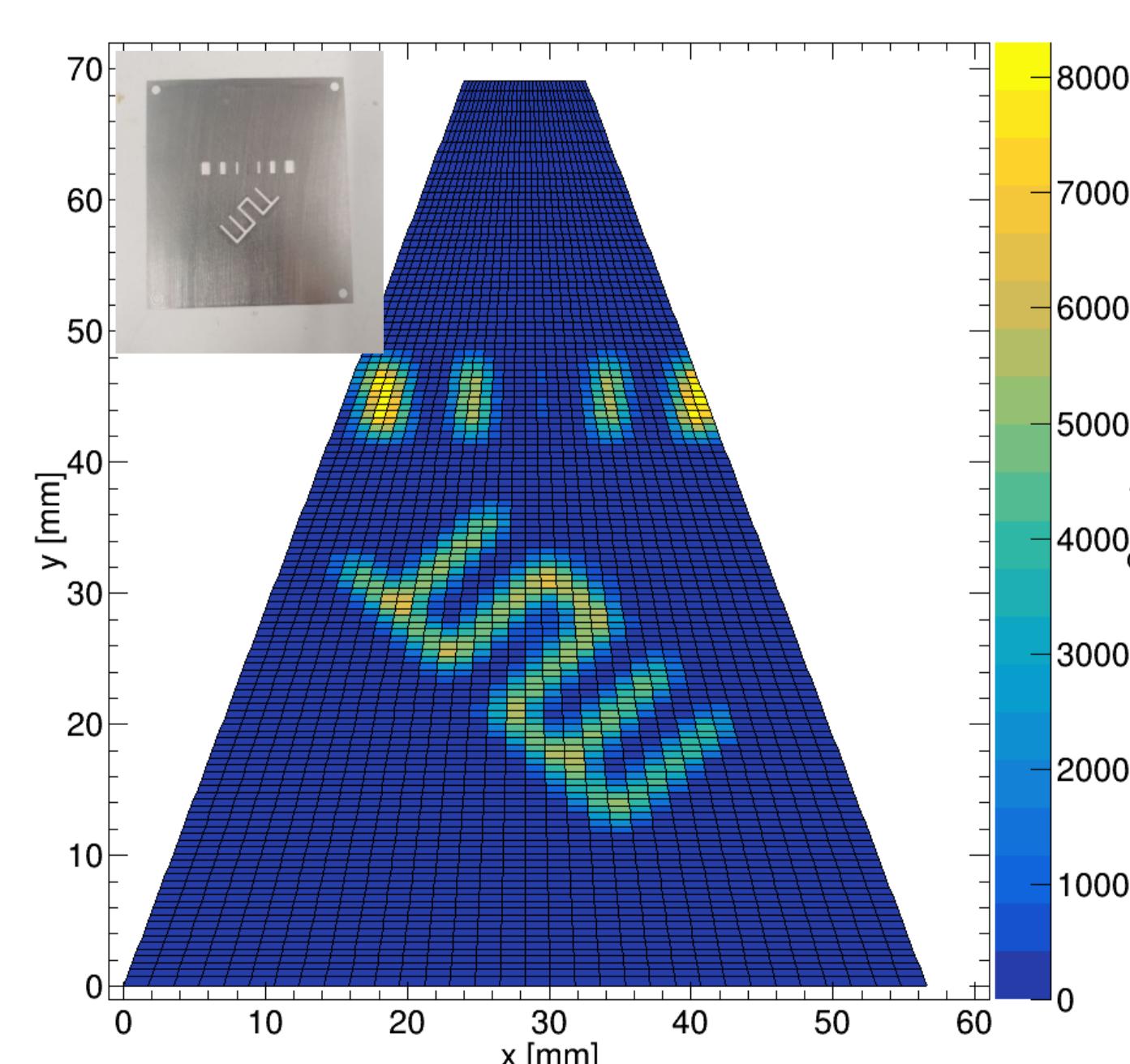


The newly developed, custom made, highly-homogeneous and segmented, 150 μ m thin double sided silicon strip detectors (DSSSD) with 32x266 stripes

Two methods for lateral imaging:

- Camera obscura
- Dual-detector coincidence

First laboratory results α -source



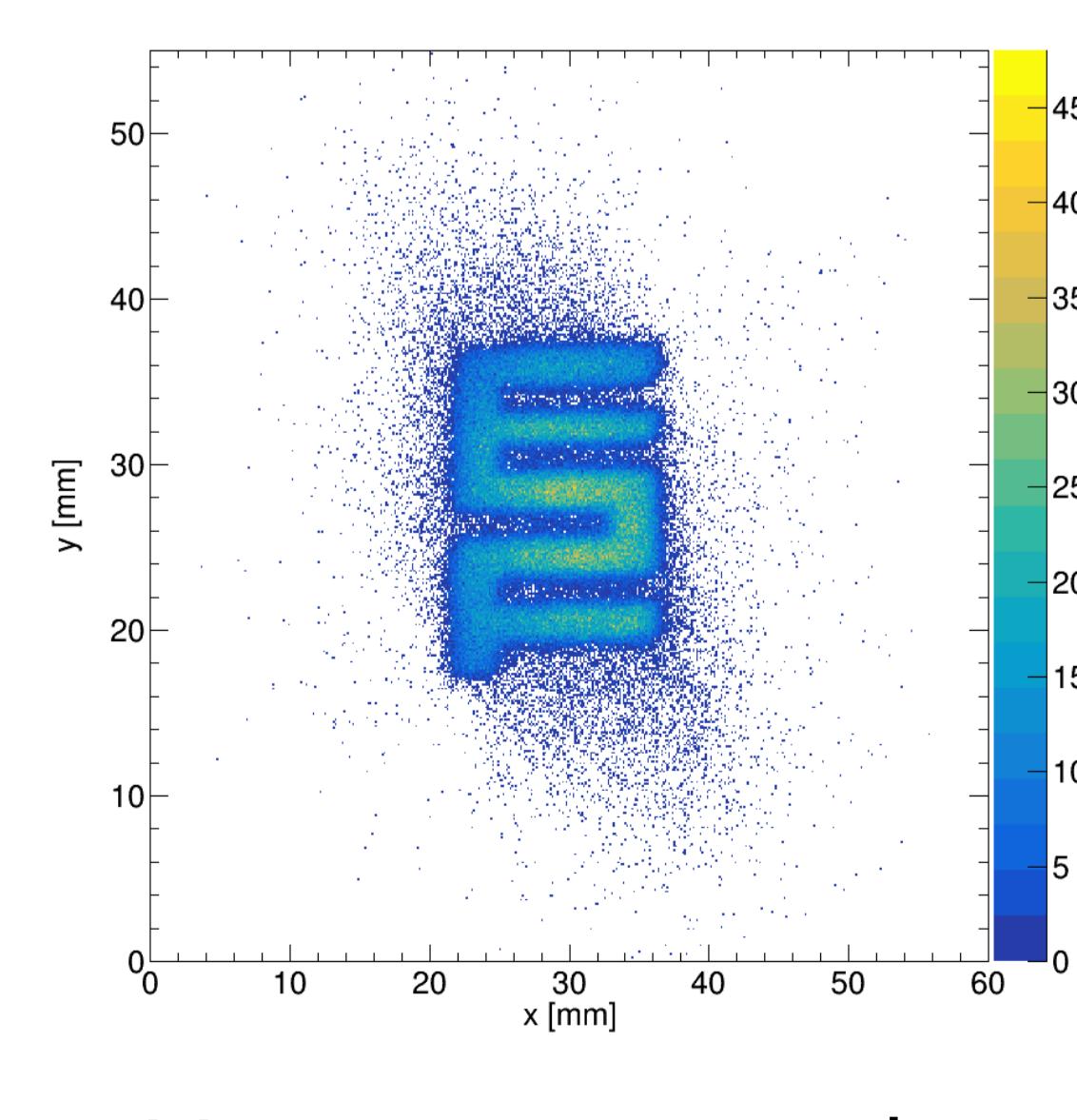
Neutron experiment in Delft



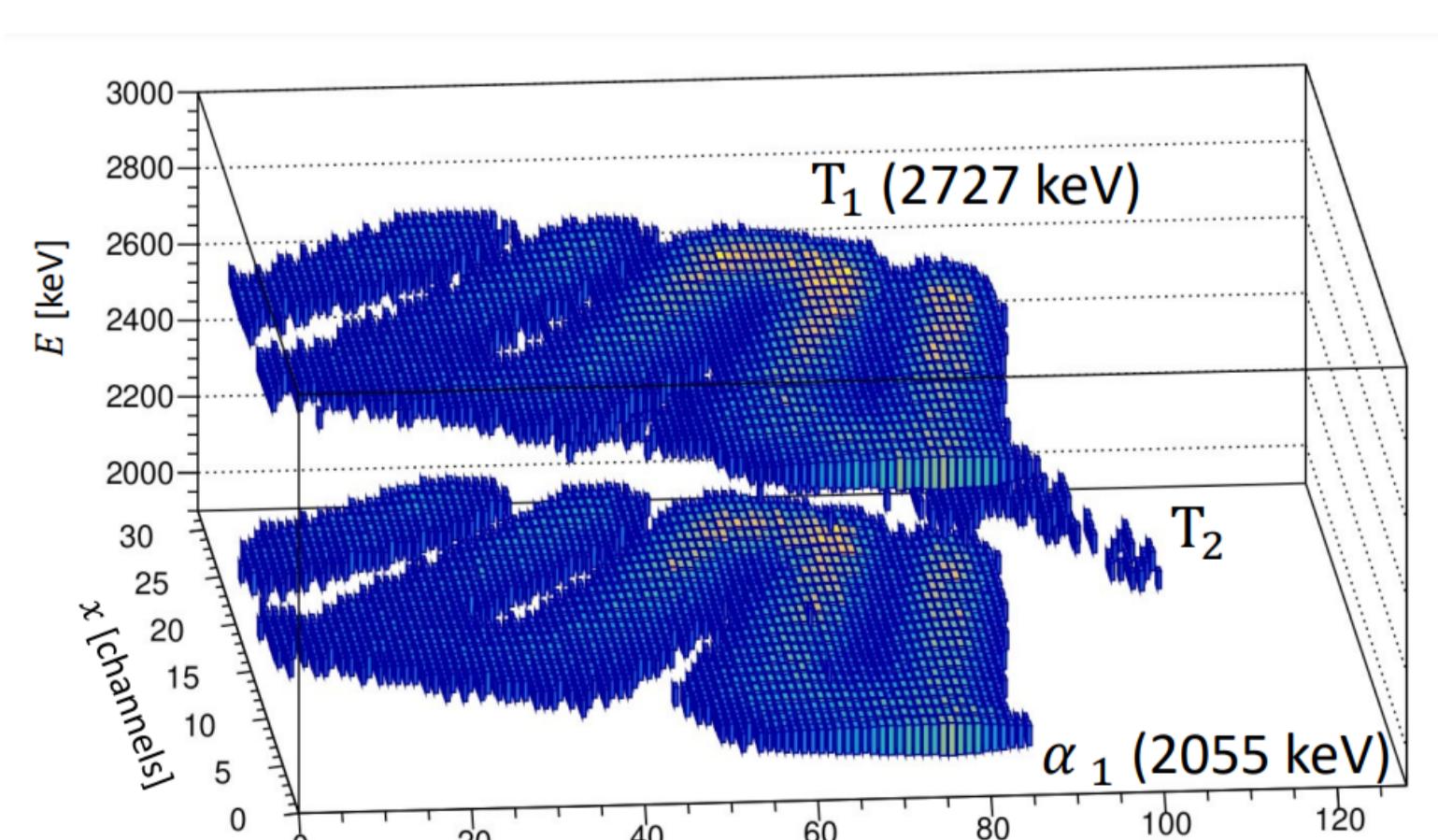
Positional resolutions:

$$\sigma_{lat,coinc} \approx 0.2\text{mm}$$

$$\sigma_{lat,camera} \approx 1.5\text{mm}$$



Bunched data stream:
13 events per package
Readout time 7ms



Camera obscura
(3D-Spectrum)

Neagu et al. (2024)