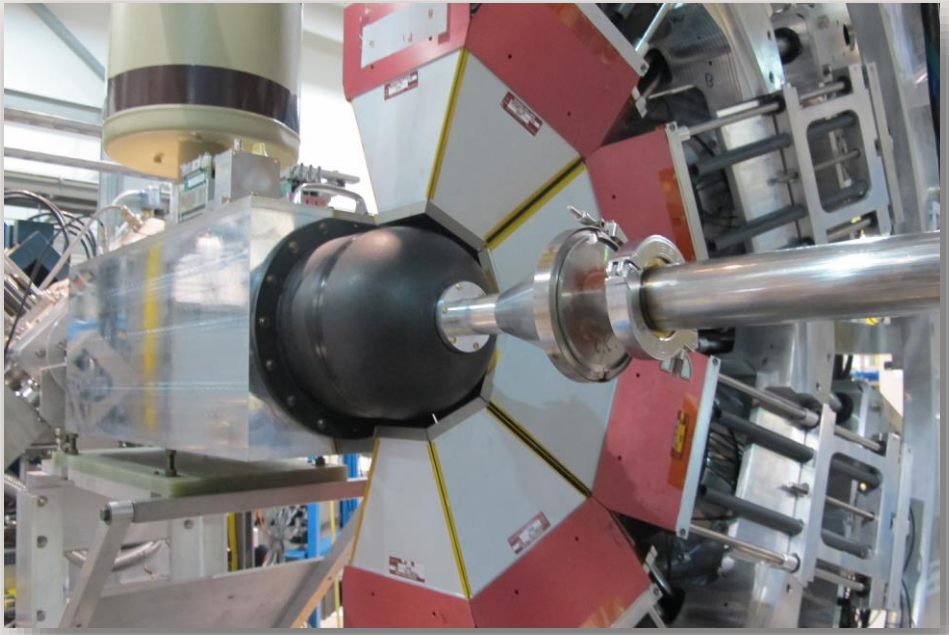
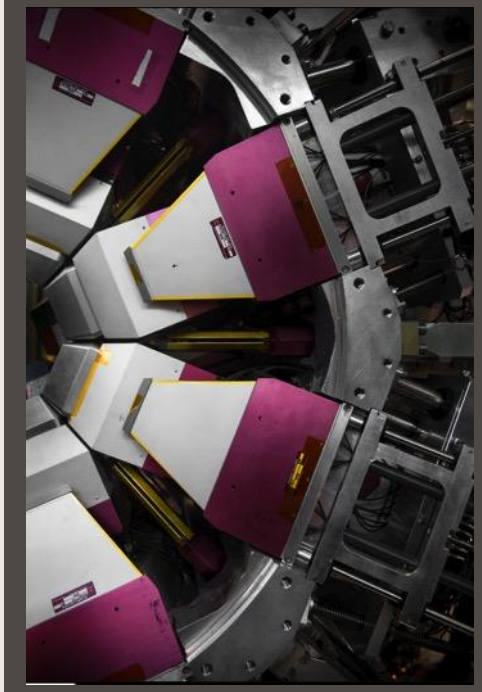
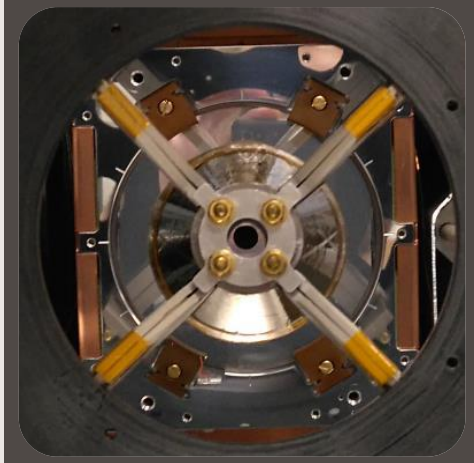
SPectrometer for Internal Conversion Electrons (SPICE) at TRIUMF

James Smallcombe | TRIUMF

NS2016 Knoxville







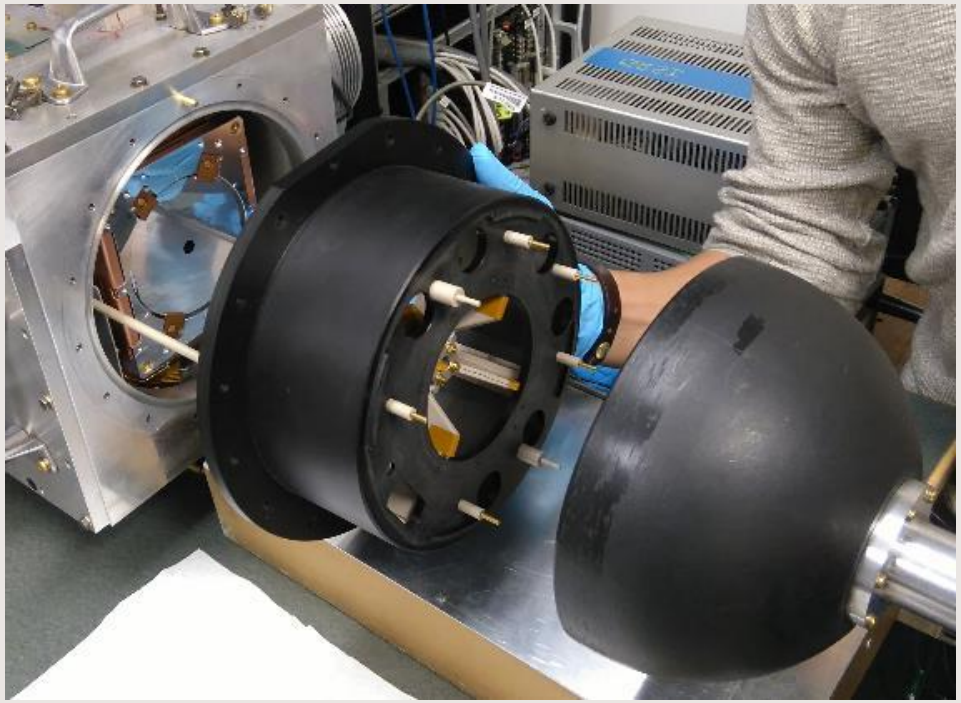
A high efficiency in-beam device, with background suppression and coupled gamma-ray detection.

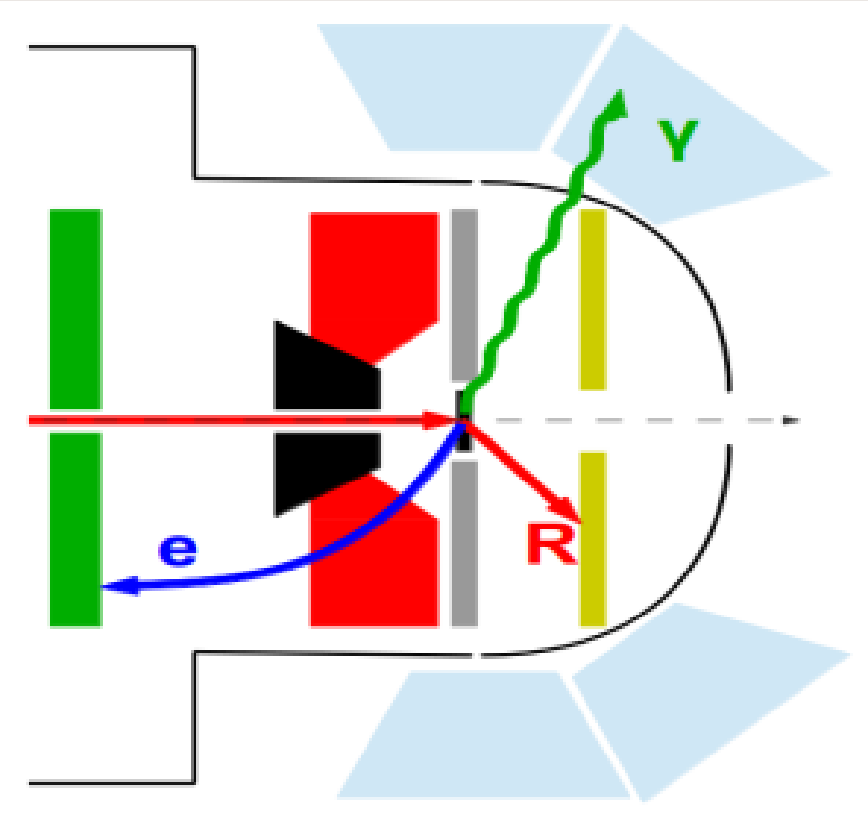
Accelerating Science for Canada
Un accélérateur de la démarche scientifique canadienne

Owned and operated as a joint venture by a consortium of Canadian universities via a contribution through the National Research Council Canada
Propriété d'un consortium d'universités canadiennes, géré en co-entreprise à partir d'une contribution administrée par le Conseil national de recherches Canada

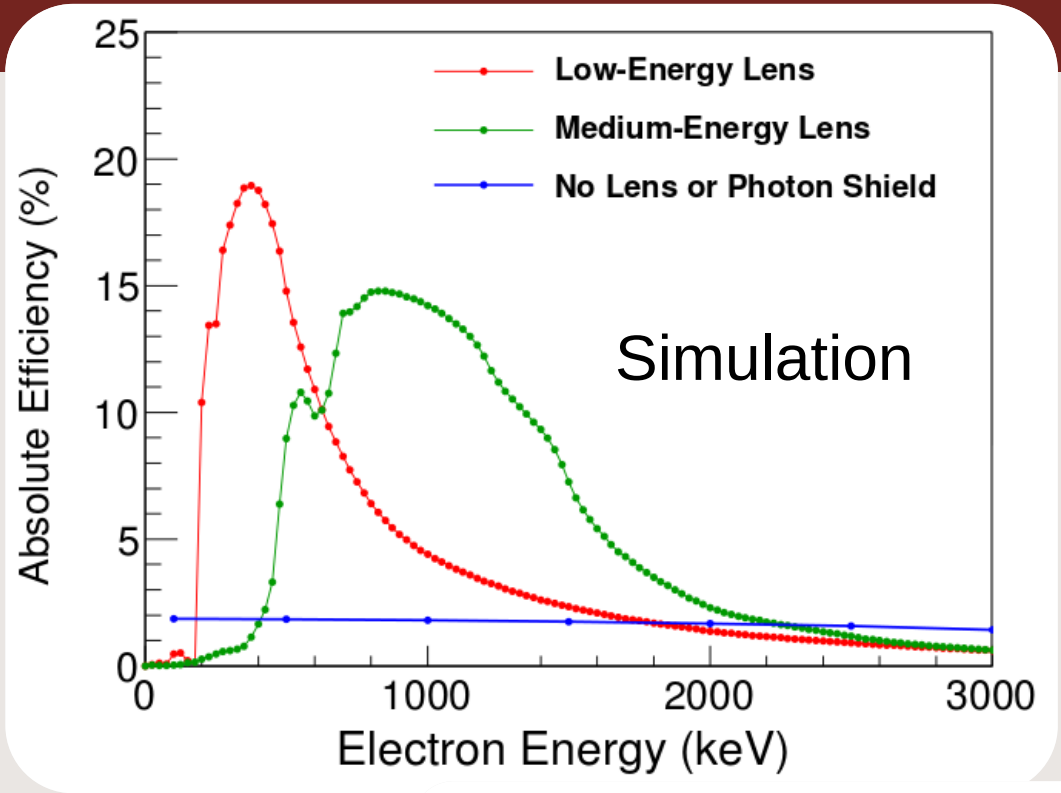
SPICE Design

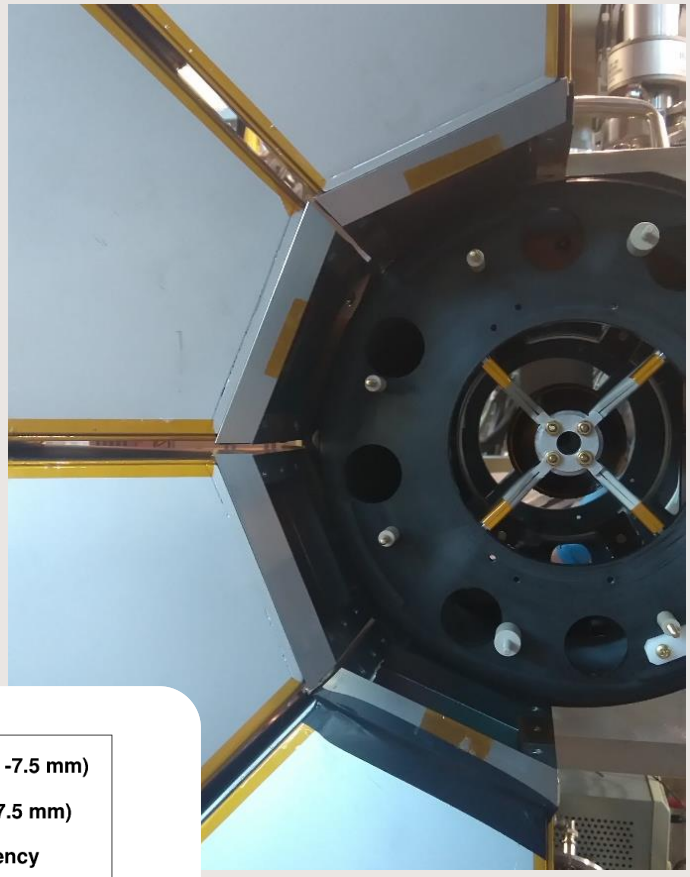
- 6 mm cooled Si(Li)
- Photon Shield
- Magnet Lens
- Recoil Detector
- TIGRESS Germanium Detectors

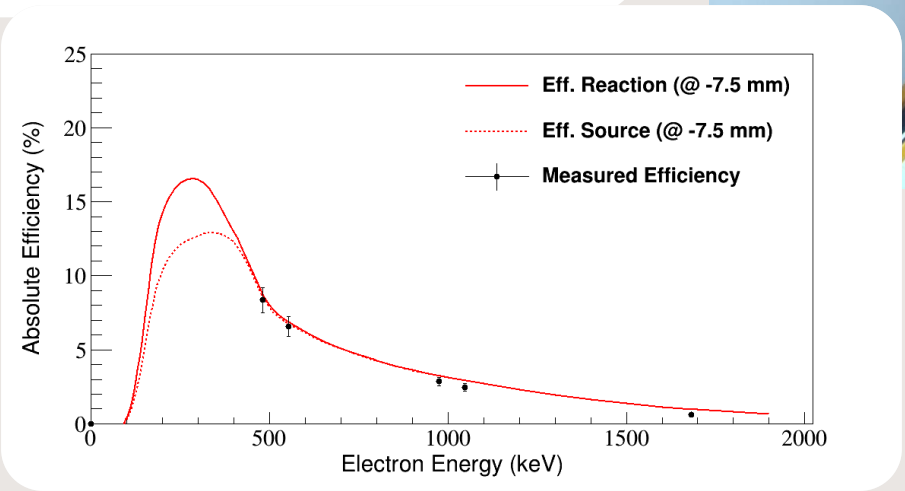




High Efficiency

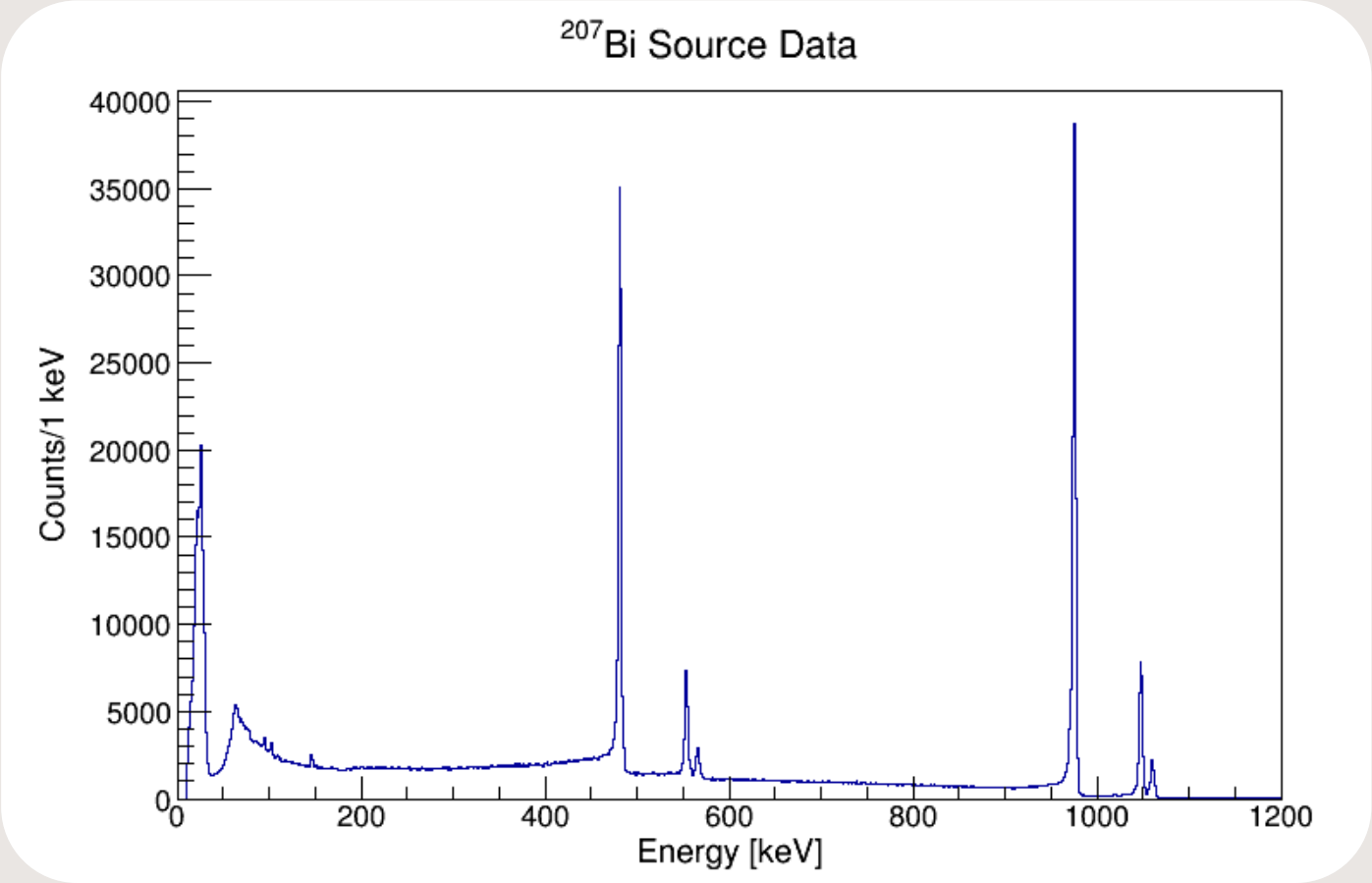






SPICE Source Data

~1 hours, ~100kBq ^{207}Bi source Low energy lens



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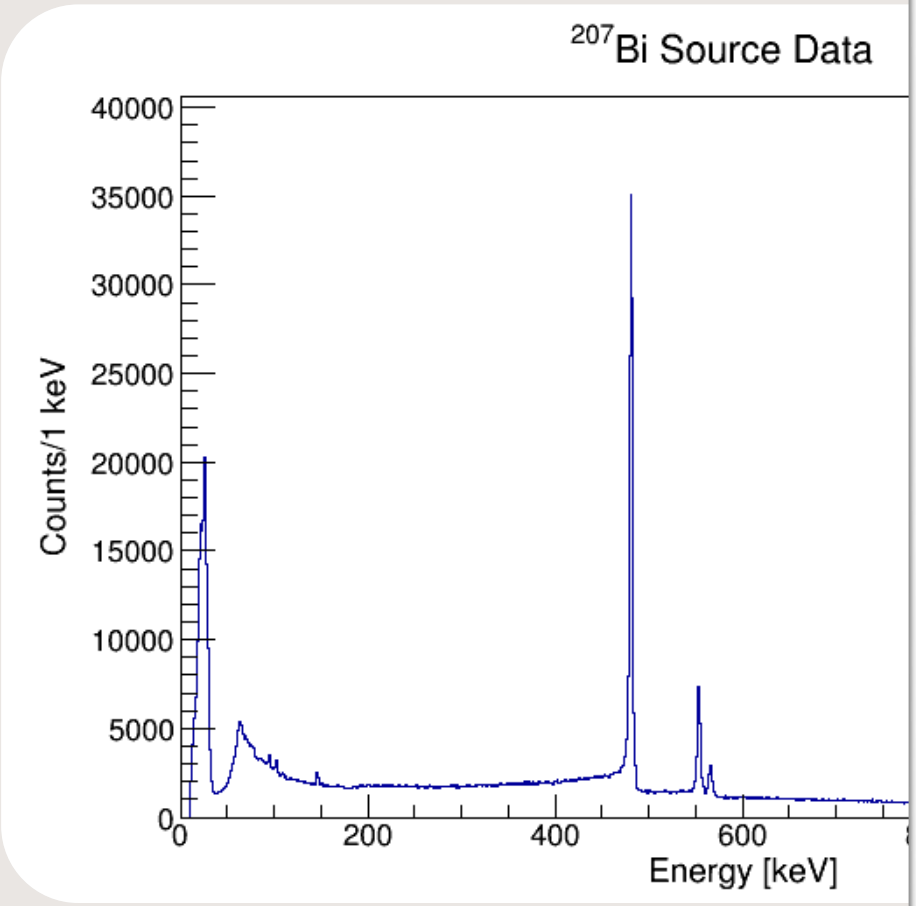
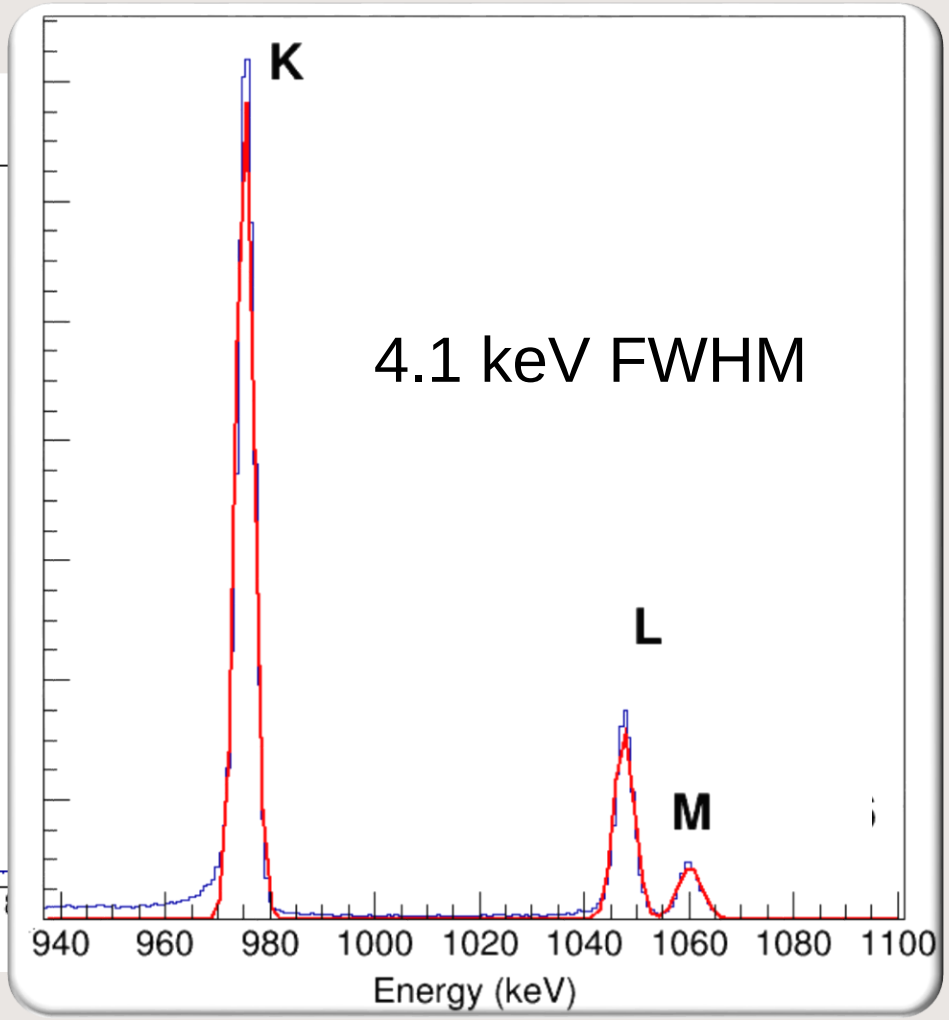
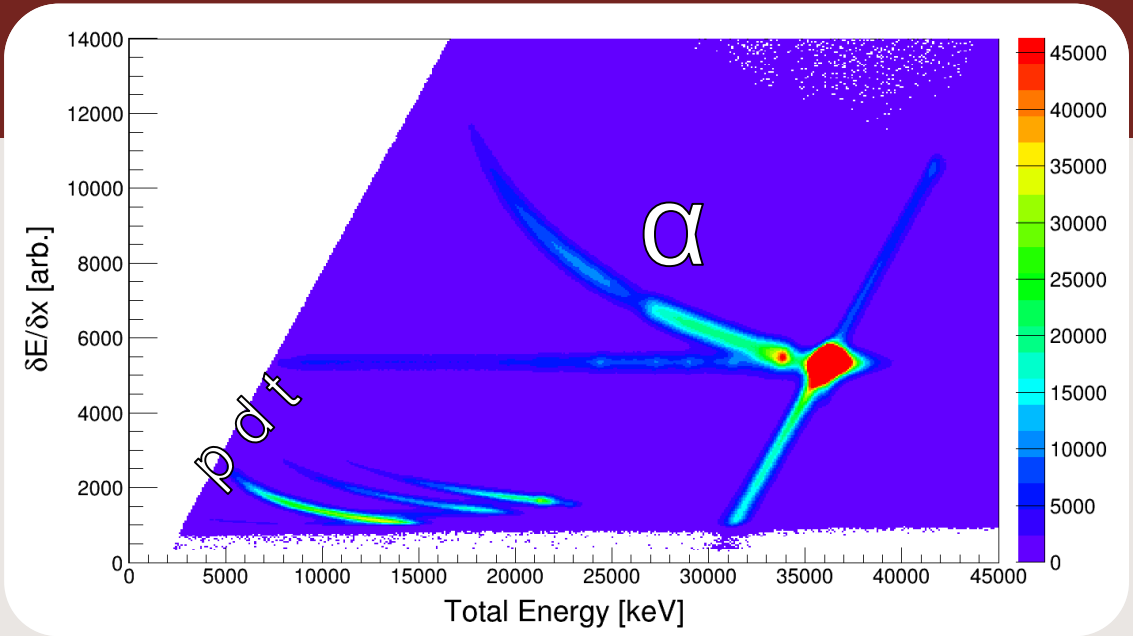




SPICE run: June 21-25th 2016

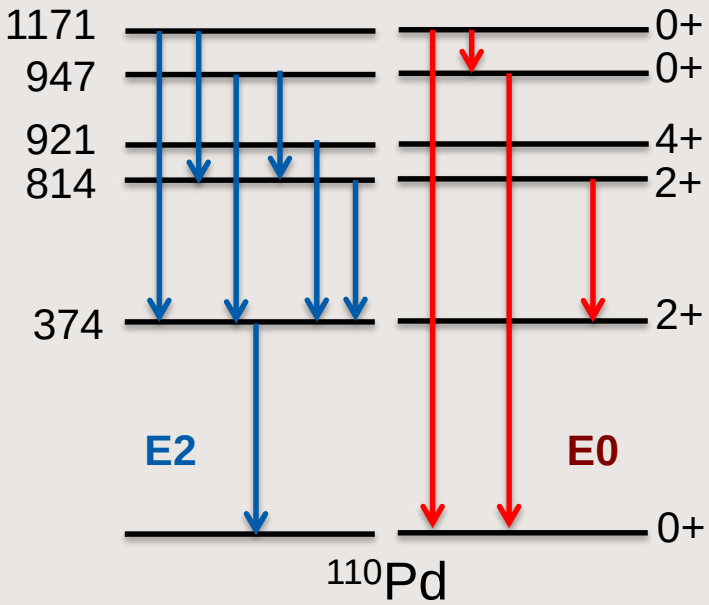


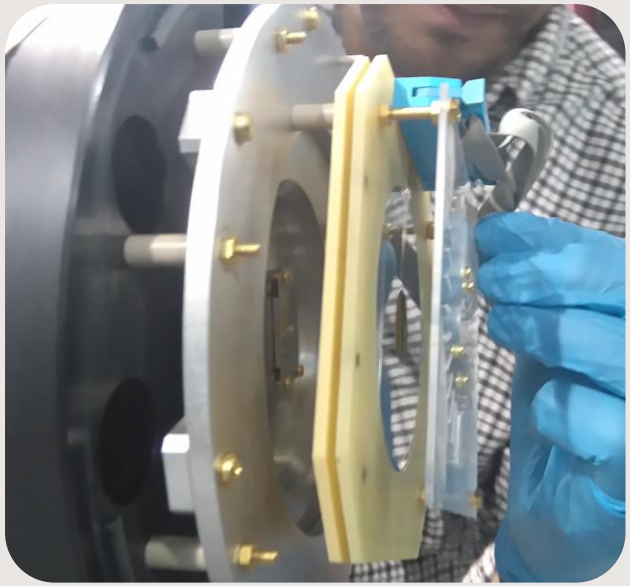
^{110}Pd(α,α')

36MeV ^{4}He 250 ppA 4 days

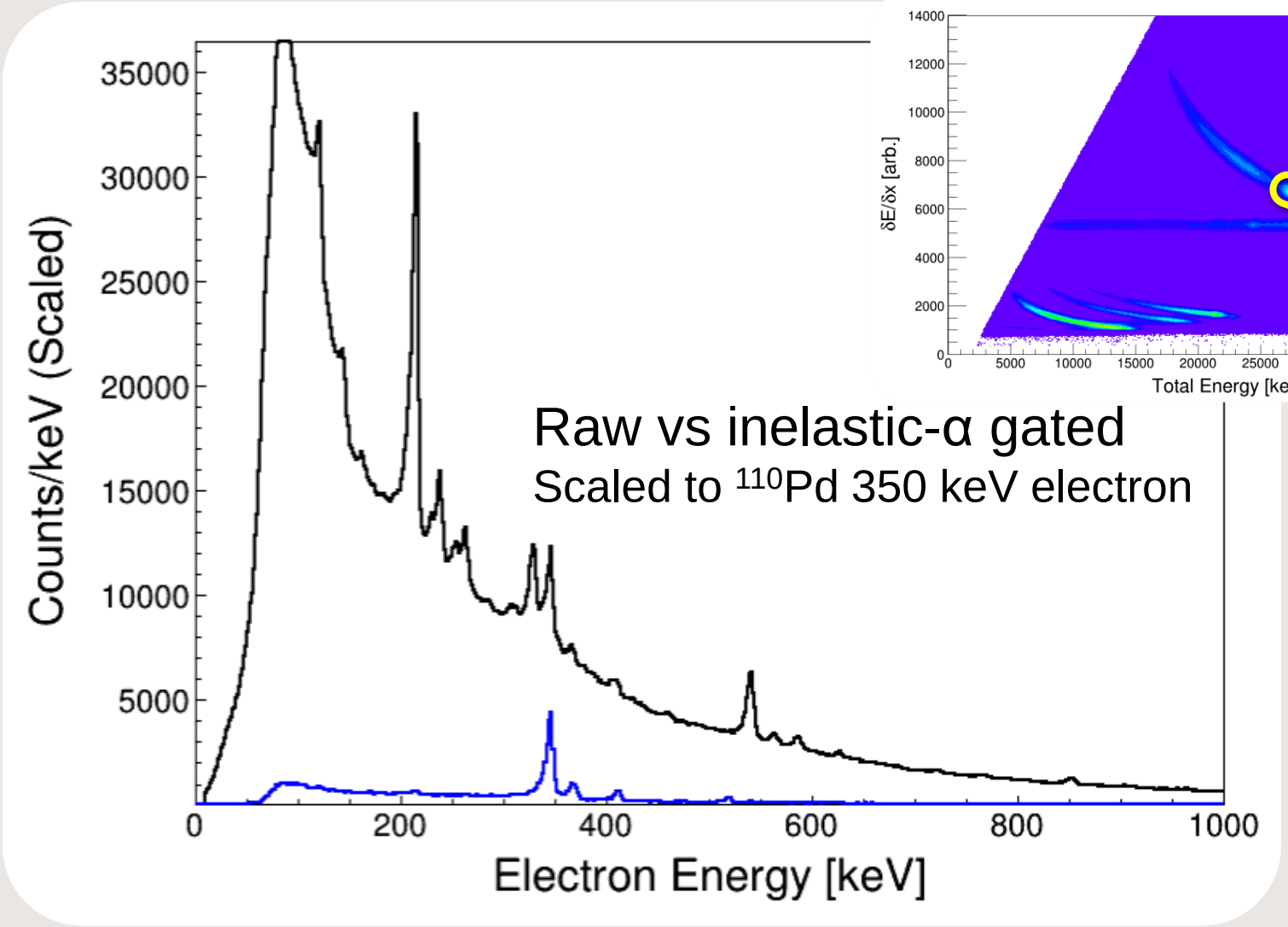
ΔE – E telescope
140+1000 um S3

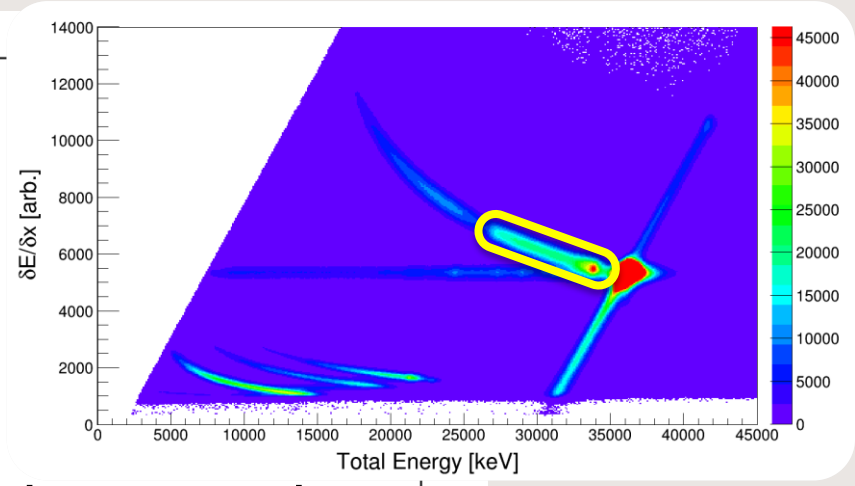
1.6mg/cm^2 ^{110}Pd target





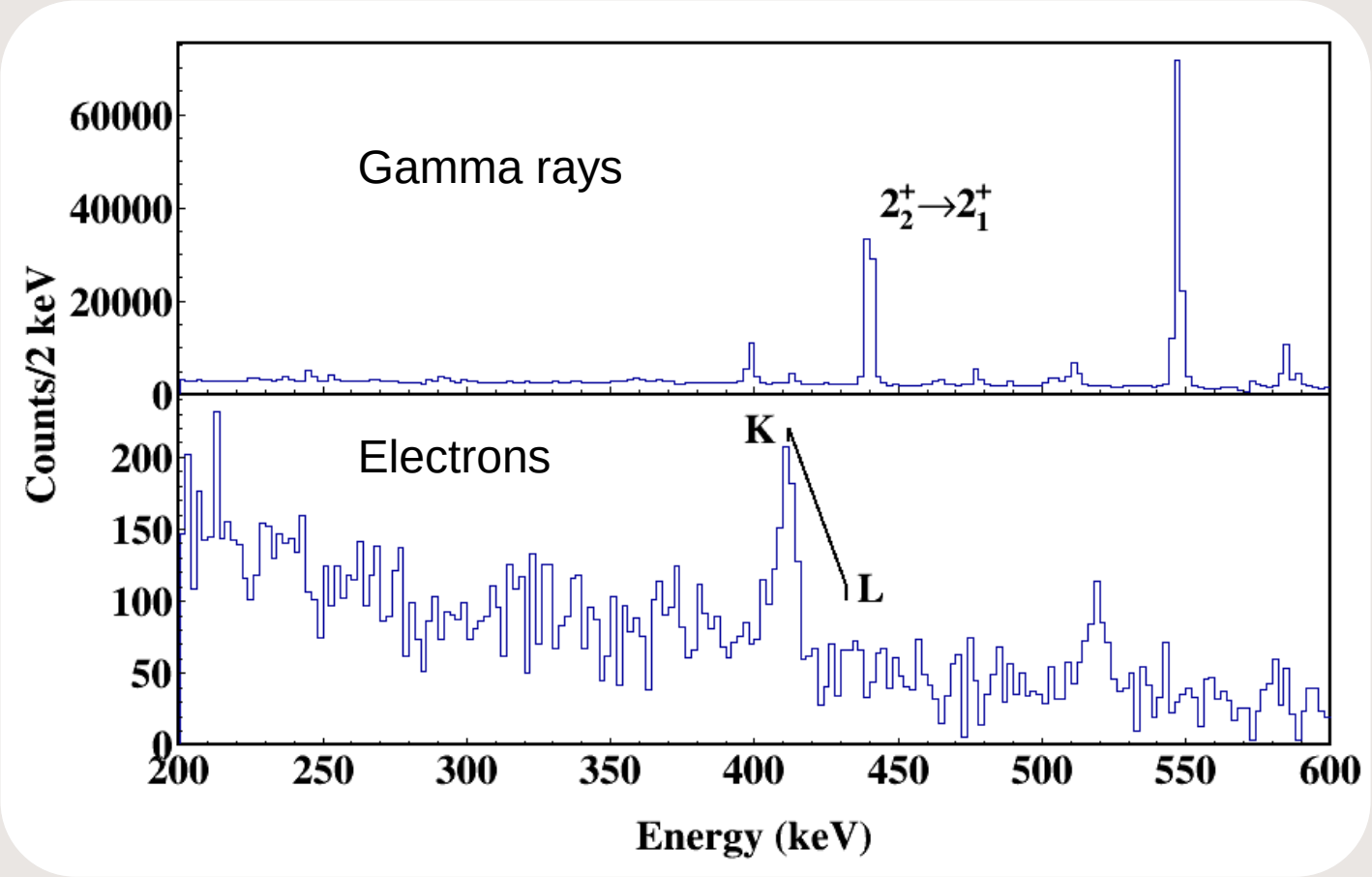
SPICE run June 21-25th 2016 ^{110}Pd(α,α‘)

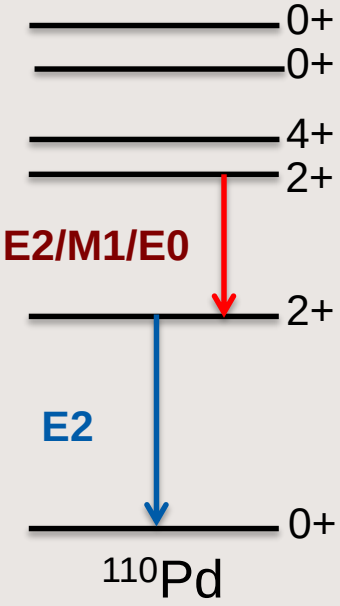




SPICE run June 21-25th 2016 ^{110}Pd(α,α‘)

$2_1^+ \rightarrow 0_1^+$ Gamma-gated spectra





Thanks to Collaborators

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