

Li₂MoO₄ phonon-scintillation detection system with MMC readout

H.L. Kim^{1,2}, H.J. Kim², I. Kim¹, Y.D. Kim¹, D.H. Kwon¹, H.J. Lee¹, M.H. Lee¹, M.K. Lee³, J.H. So¹, Y.H. Kim¹

¹Center for Underground Physics, Institute for Basic Science, Korea, ²Department of Physics, Kyungpook National University, Korea, ³Korea Research Institute of Standards and Science, Korea

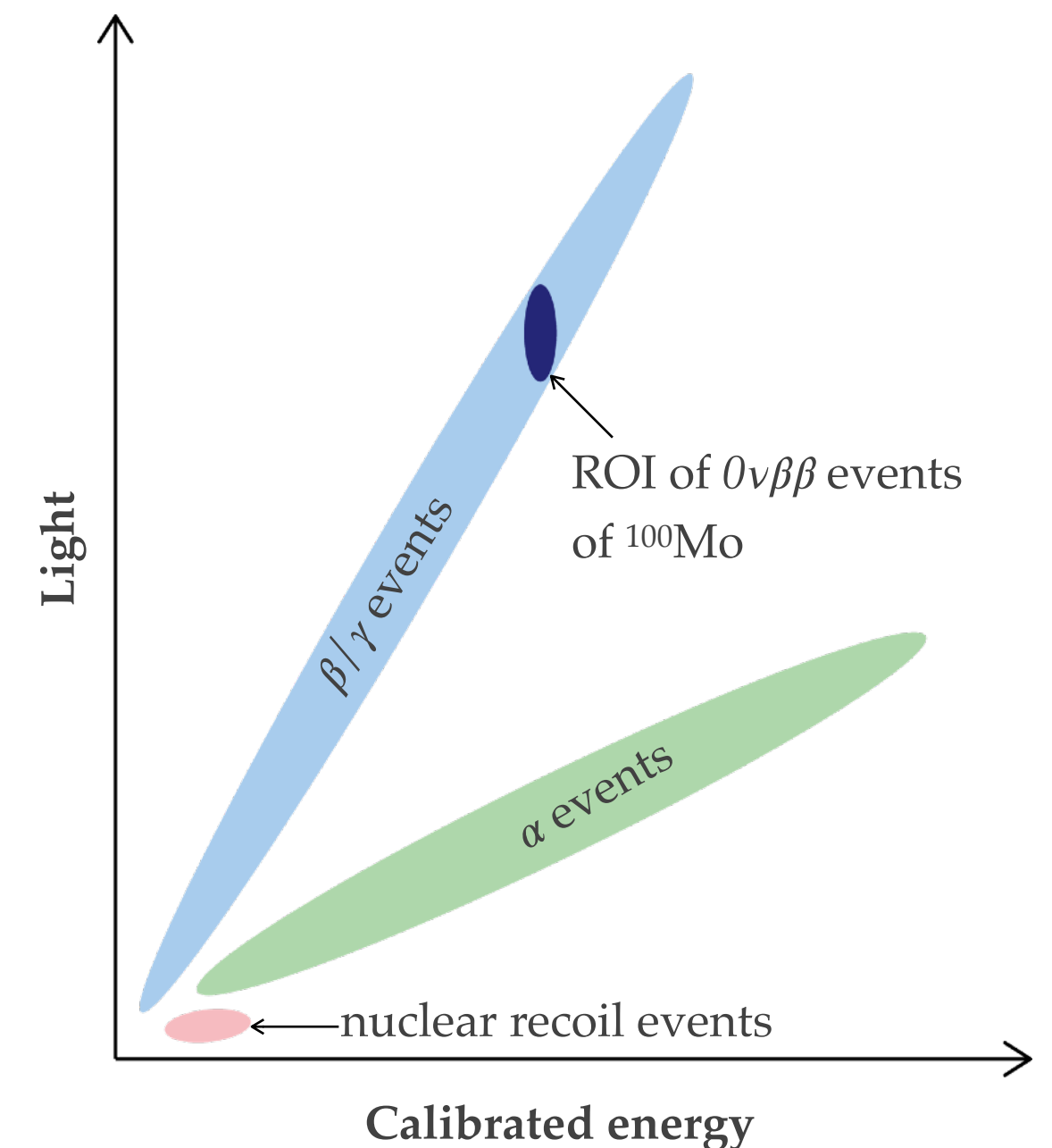
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*AMoRE (Advanced Mo-based Rare process Experiment) project



- ◆ Isotope : ¹⁰⁰Mo ($Q_{\beta\beta} = 3034$ keV, Natural abundance = 9.74 %)
- ◆ Enrichment : up to 96 % by centrifuge method
- ◆ Technique : MMC based cryogenic scintillating detector
- ◆ Advantage : high energy resolution, significant particle identification.

- ◆ What is important for choosing the crystal
 - ✓ Low internal background.
 - ✓ Reasonable energy resolution
 - ✓ Proper particle identification by light/heat or PSD of phonon signal.
- ◆ Li₂MoO₄ can be a good candidate for its easy growing and lower internal background.
- ◆ Here, we present the test result of Li₂MoO₄ crystal using MMC readout at milli-kelvin temperature for next AMoRE project.



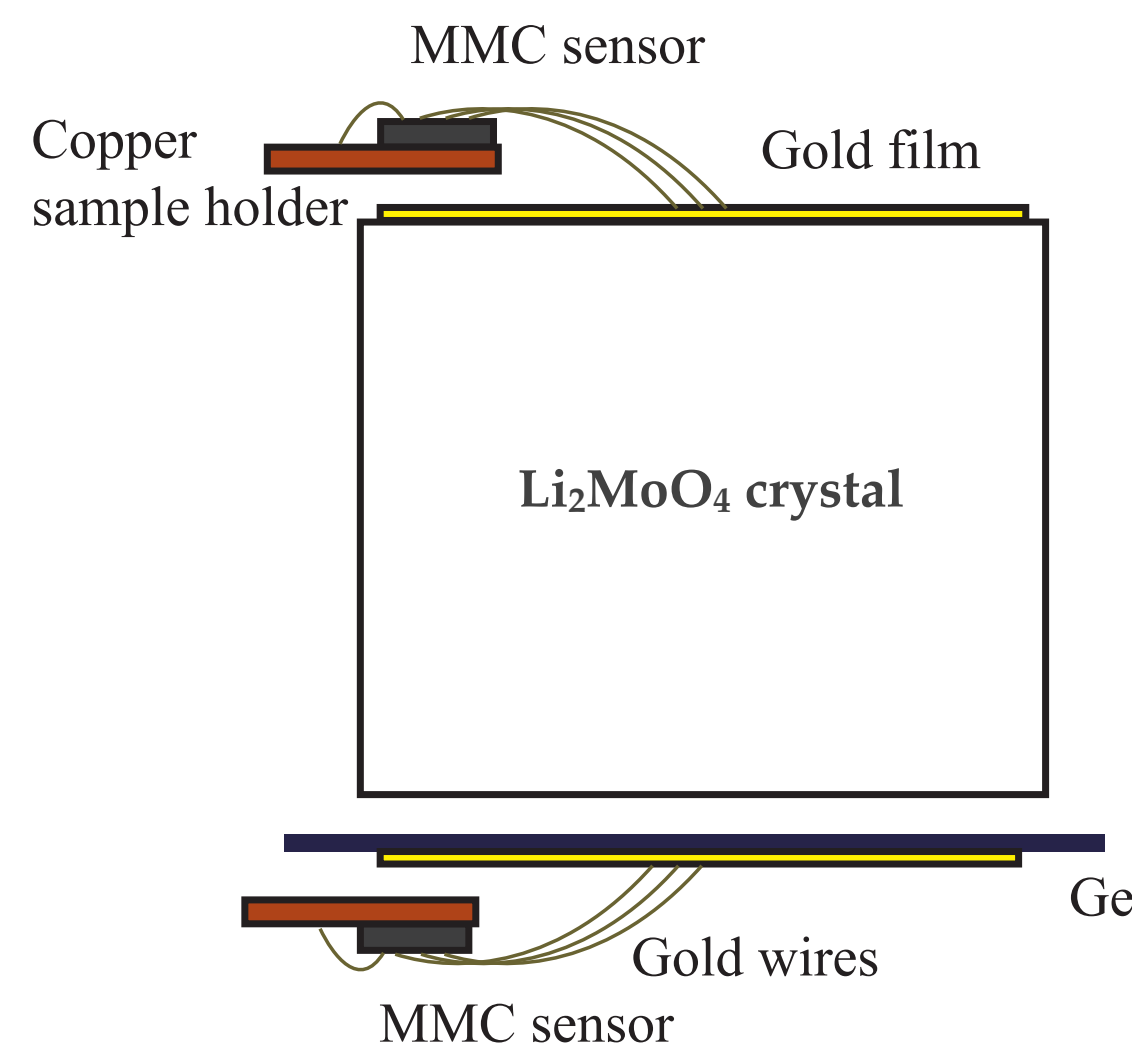
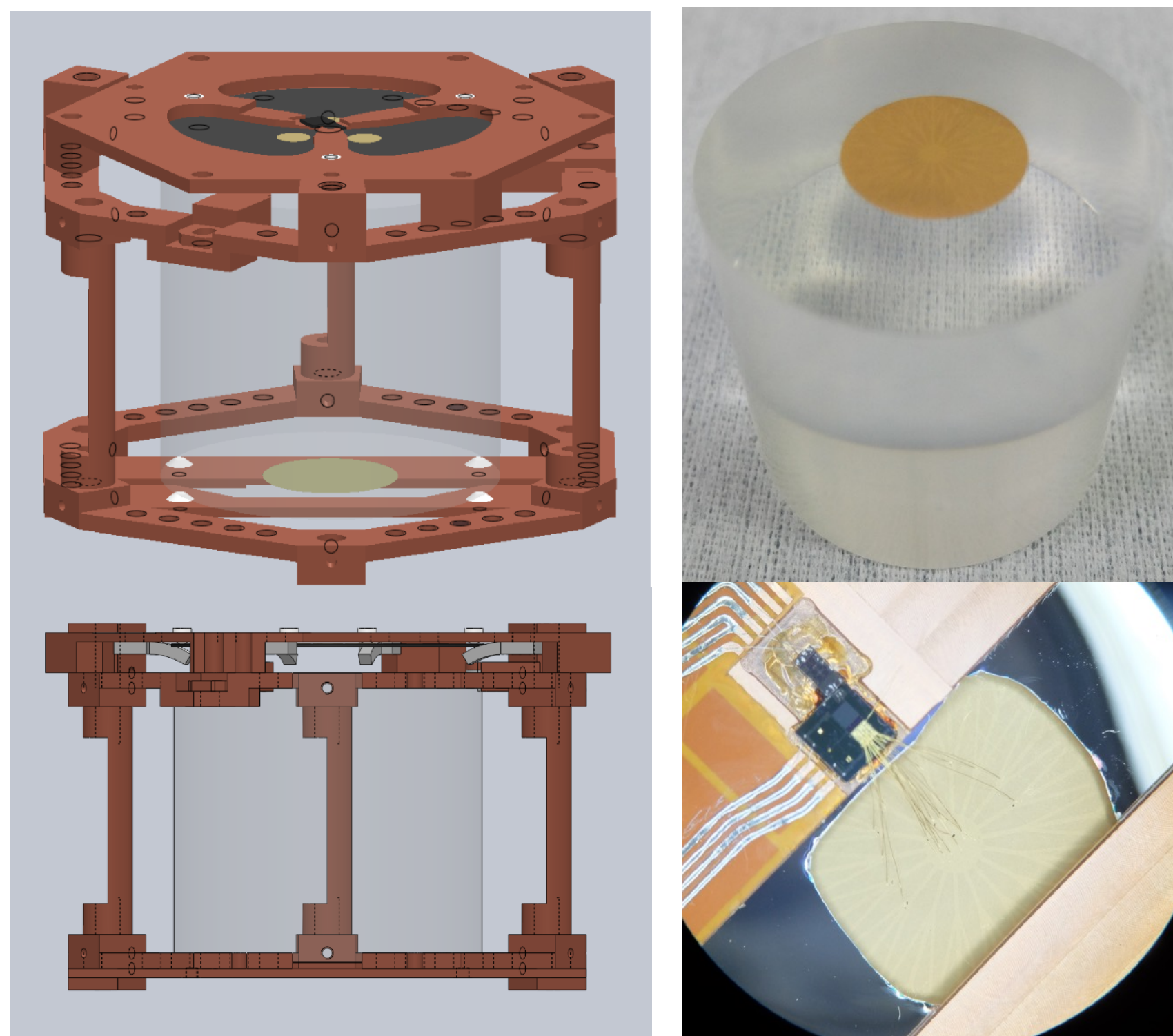
*ROI : Region of Interest

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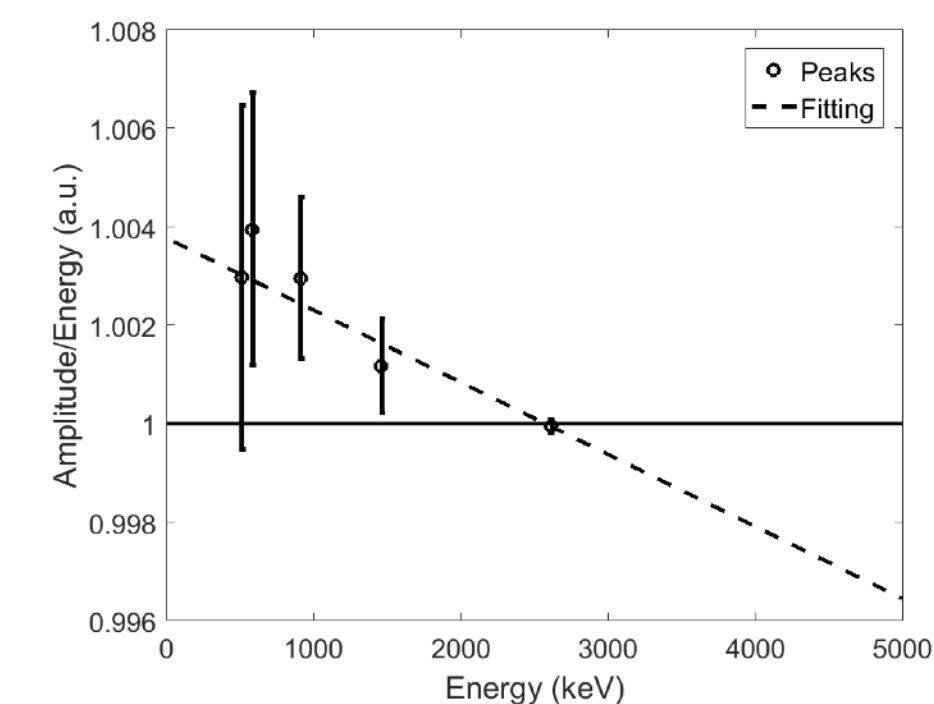
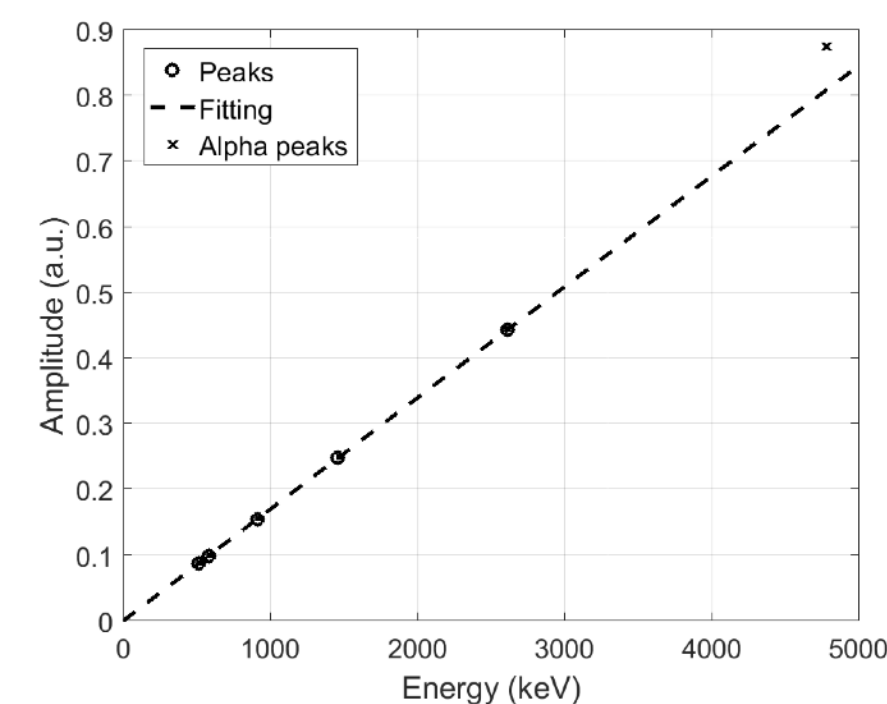
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* Experimental Setup

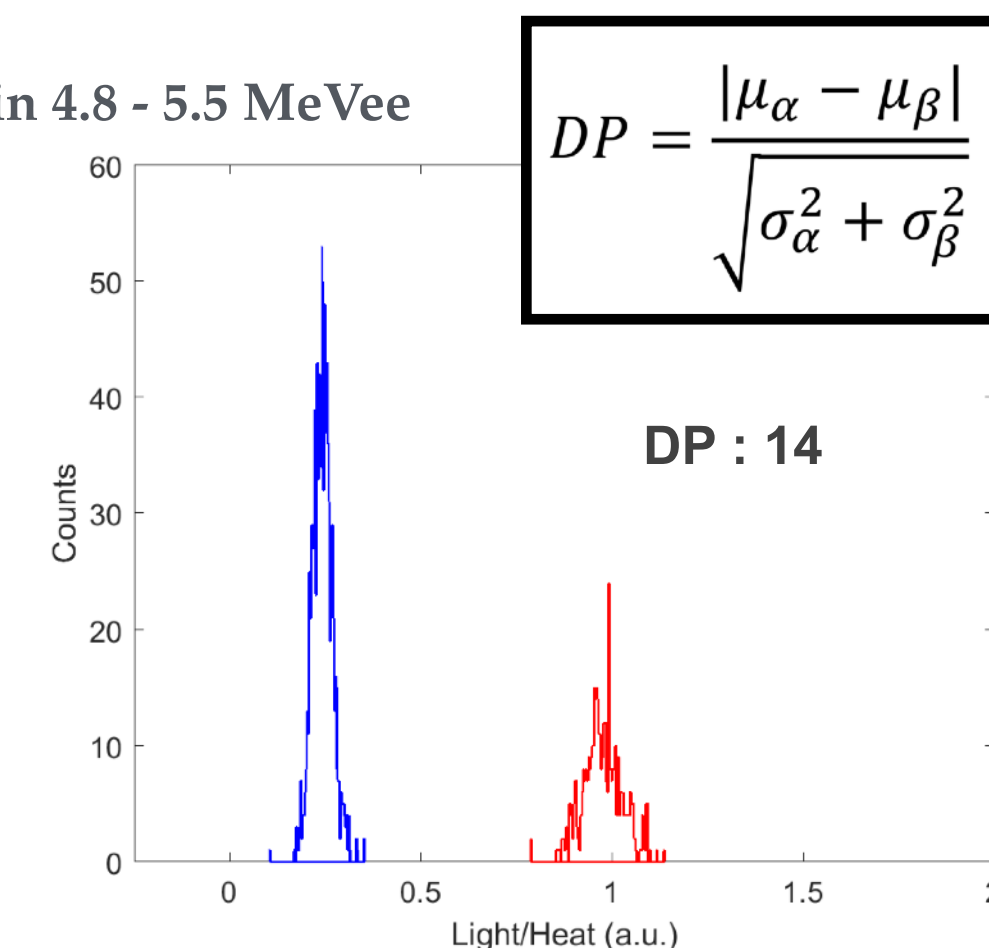
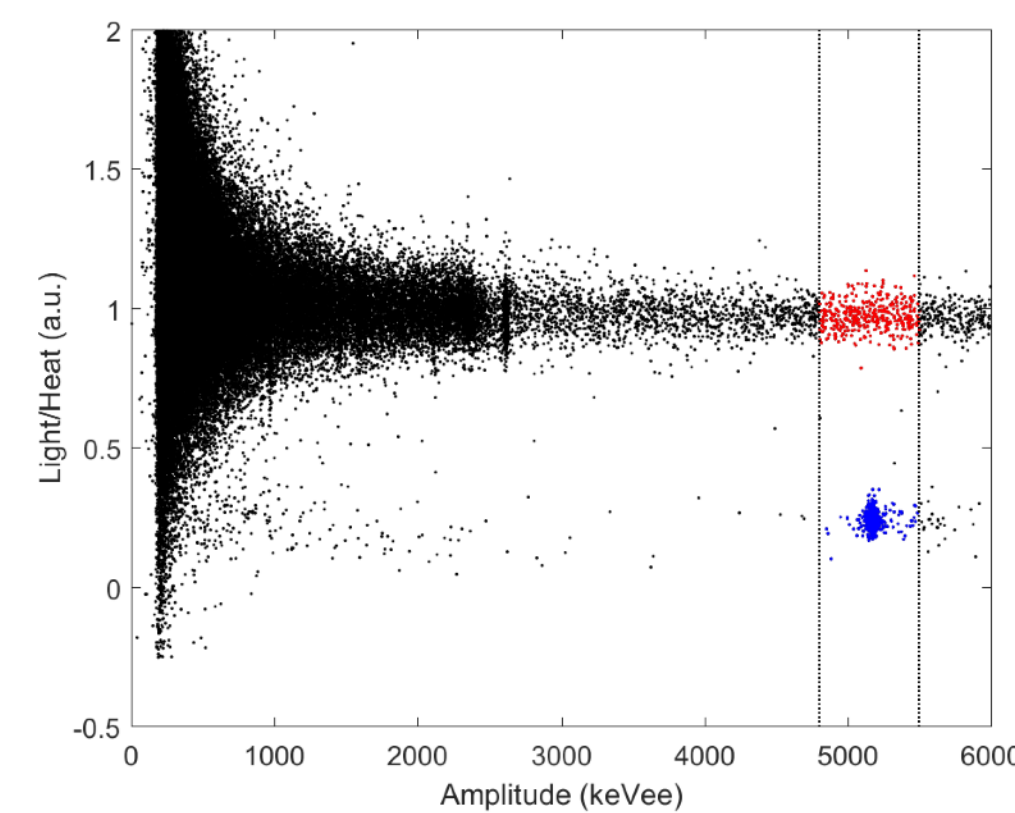
* Results



◆ Energy calibration linearity



◆ α and β discrimination power (DP) in 4.8 - 5.5 MeVee



$$DP = \frac{|\mu_\alpha - \mu_\beta|}{\sqrt{\sigma_\alpha^2 + \sigma_\beta^2}}$$