

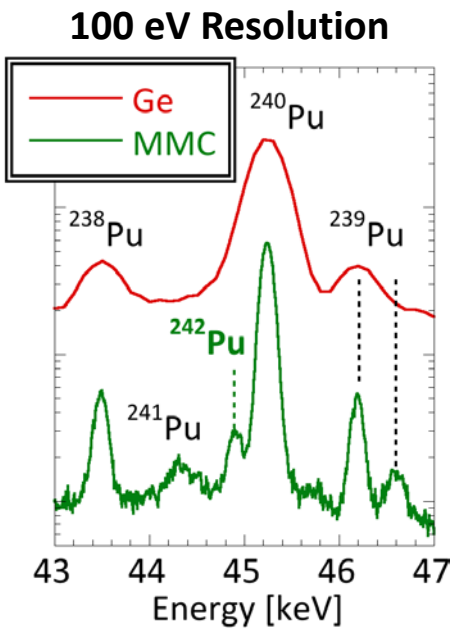


# Superconducting Detectors with Ultra-high Resolution

## Research Overview

Development of X-ray and  $\gamma$ -ray detectors with operating temperatures  $<0.1\text{K}$  for 10x higher energy resolution than Ge. Applications in safeguards and basic science.

50 mK Cryostat



## Potential Collaborations

- Magnetic microcalorimeter (MMC)  $\gamma$ -ray detectors with energy resolution  $<50\text{ eV}$ :
  - Detector array development
- High-accuracy nuclear analysis
  - Non-destructive assay in safeguards
  - U-233 for Th fuel cycle
- Synchrotron X-ray science
  - e.g. activator oxidation states
- Available for new applications (FRIB?)

## Previous Dissertations

- Superconducting high-resolution  $\gamma$ -ray detectors (Jonathan Dreyer, UCB, 2012)
- Superconducting X-ray spectrometer for synchrotron XAS (M. Carpenter, UCD, 2015)
- Metallic Magnetic Calorimeters for Nuclear Safeguards (Cameron Bates, UCB, 2015)

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