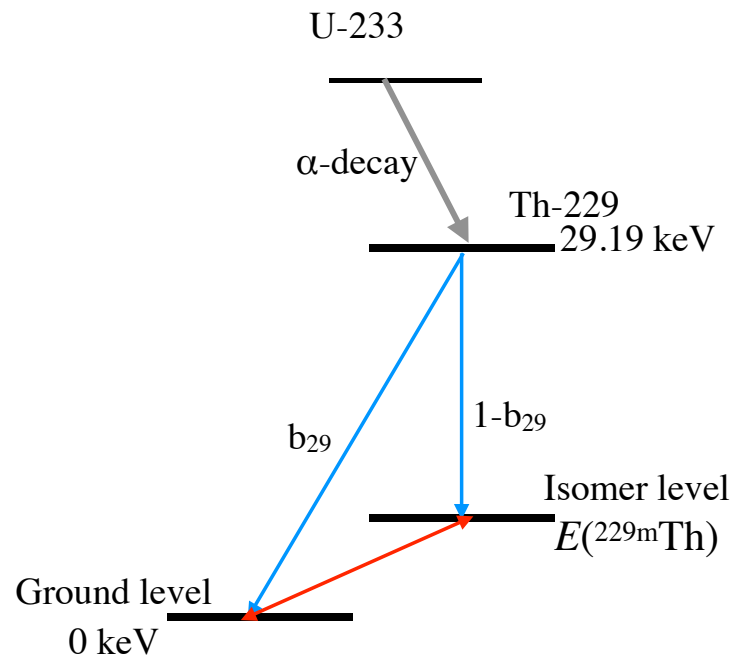


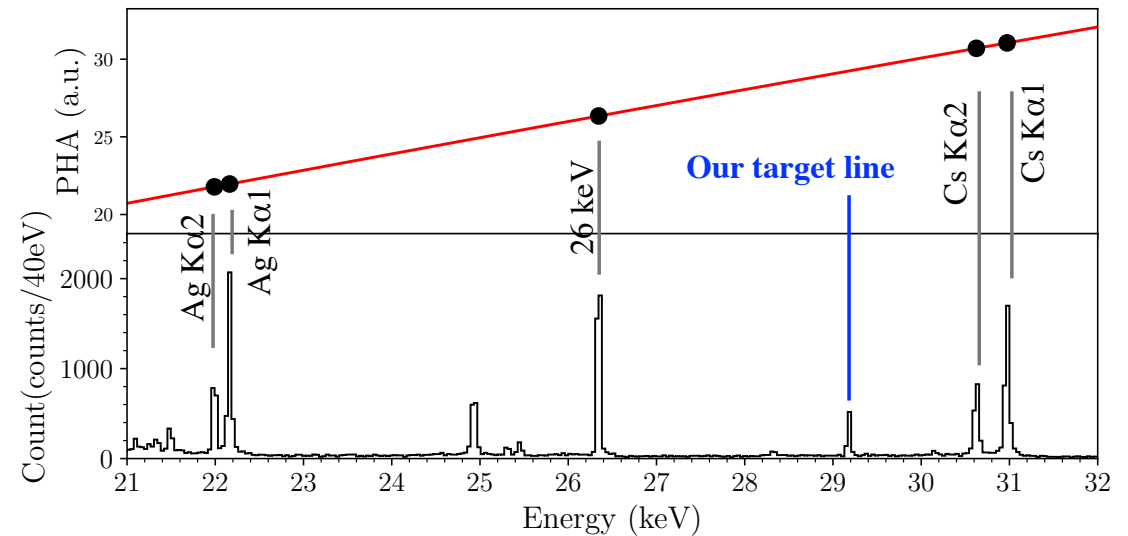
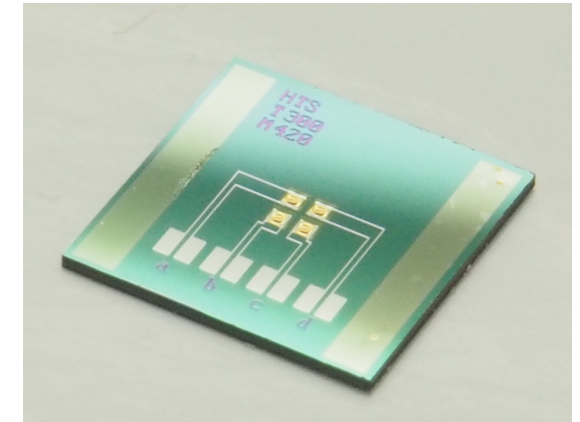
# $\gamma$ -ray measurements of Thorium-229 isomer using TES microcalorimeter

H.Muramatsu et al.,

- ✓ Motivate from realizing Th-229 nuclear clock
- ✓ We determined the lowest energy level in Th-229 by the TES with 40 eV FWHM



C(pJ/K)	Thickness of Au absorber( $\mu\text{m}$ )
3.97	3.6

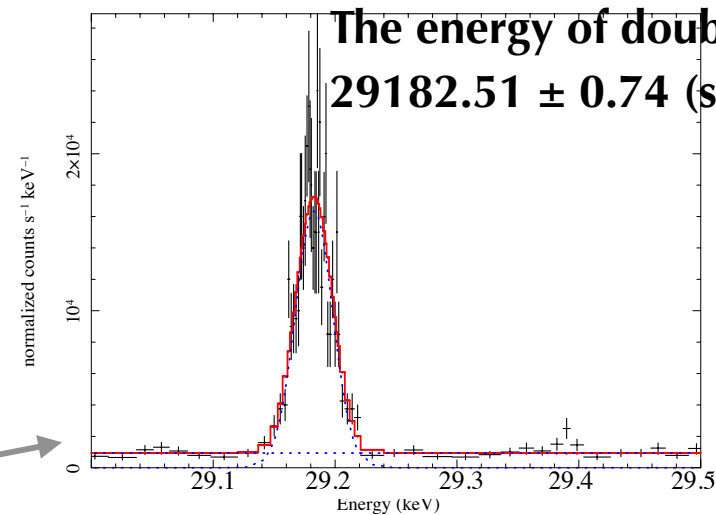
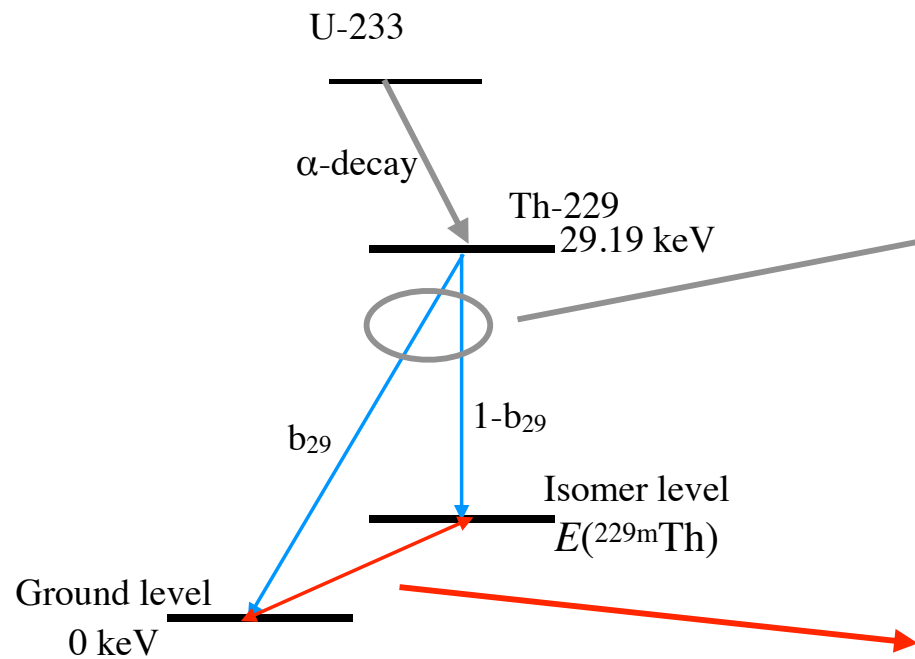


# $\gamma$ -ray measurements of Thorium-229 isomer using TES microcalorimeter

H.Muramatsu et al.,



- ✓ Motivate from realizing Th-229 nuclear clock
- ✓ We determined the lowest energy level in Th-229 by the TES with 40 eV FWHM



The energy of doublet:  
 $29182.51 \pm 0.74$  (stat)  $\pm 0.24$  (sys) eV

$$\begin{aligned}
 E(^{229m}\text{Th}) &= E(29.19 \text{ keV} \rightarrow 0) - E(29.19 \text{ keV} \rightarrow ^{229m}\text{Th}) \\
 &= \frac{[E(29.19 \text{ keV doublet}) - E(29.19 \text{ keV} \rightarrow 0)]}{(1-b_{29})}
 \end{aligned}$$

**Our results**                      Results from spring8 experiment  
(T.Masuda et al., arXiv(2019) )

**$E(^{229m}\text{Th}): 8.30 \pm 0.84$  (stat)  $\pm 0.38$  (sys) eV**