

# **BEGe**

# **Efficiency & Simulations**

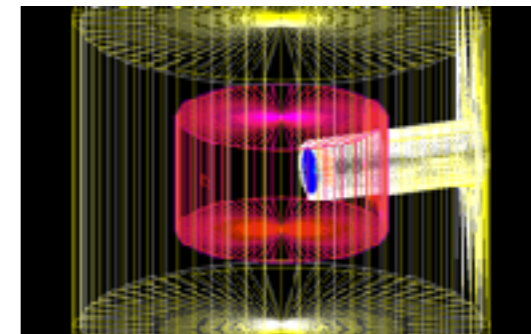
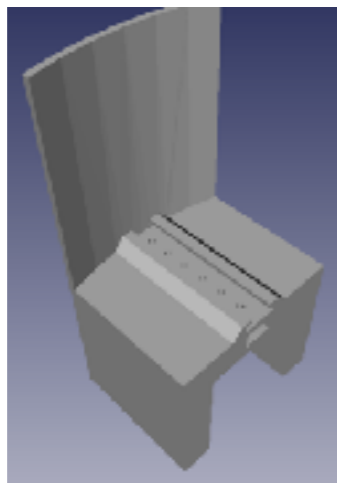
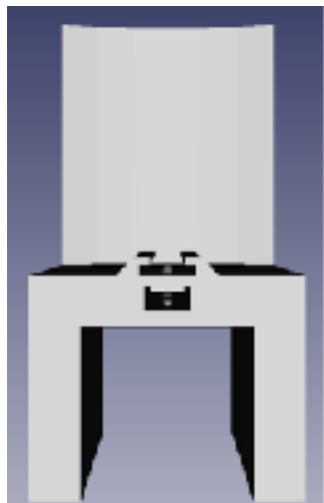
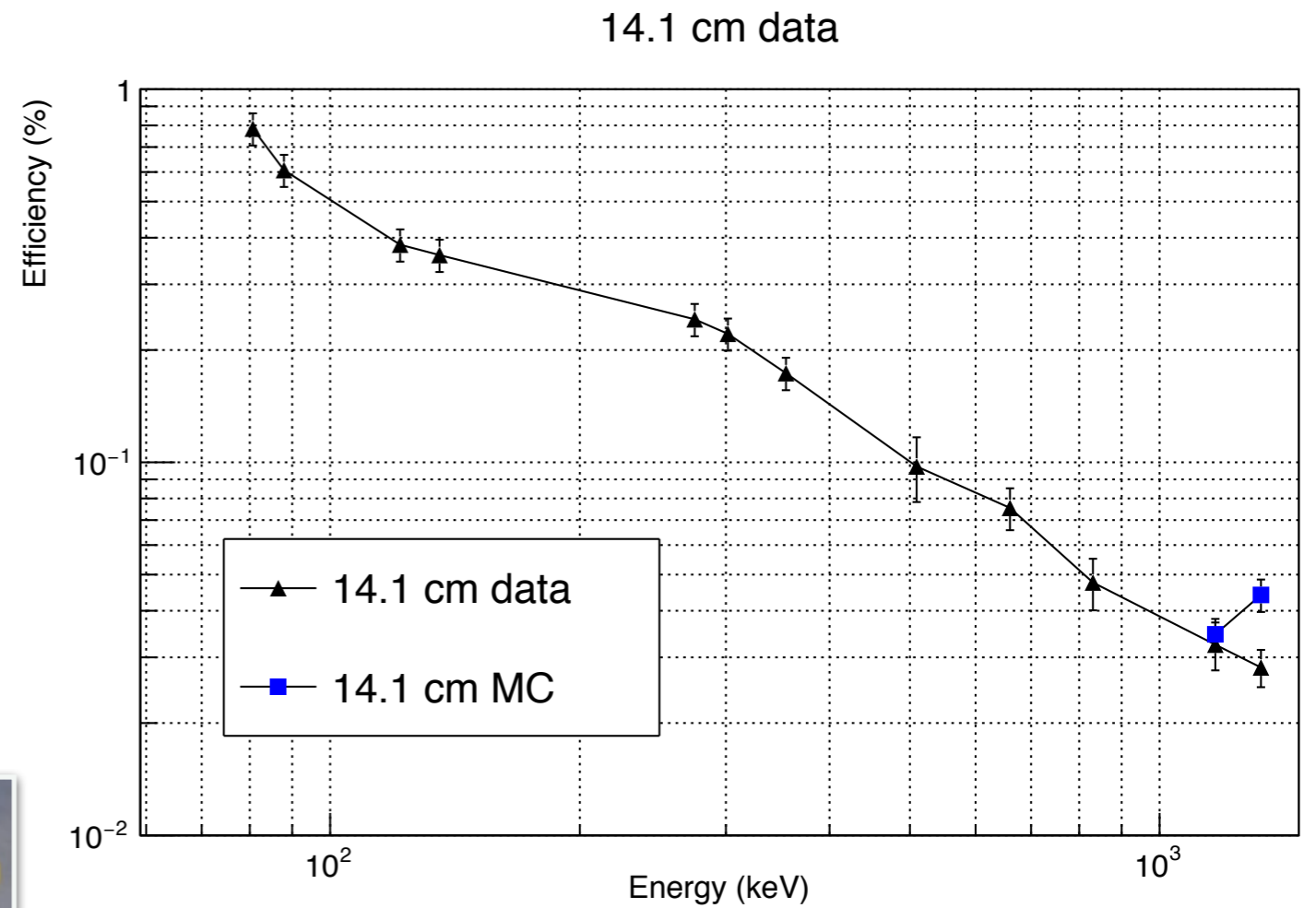
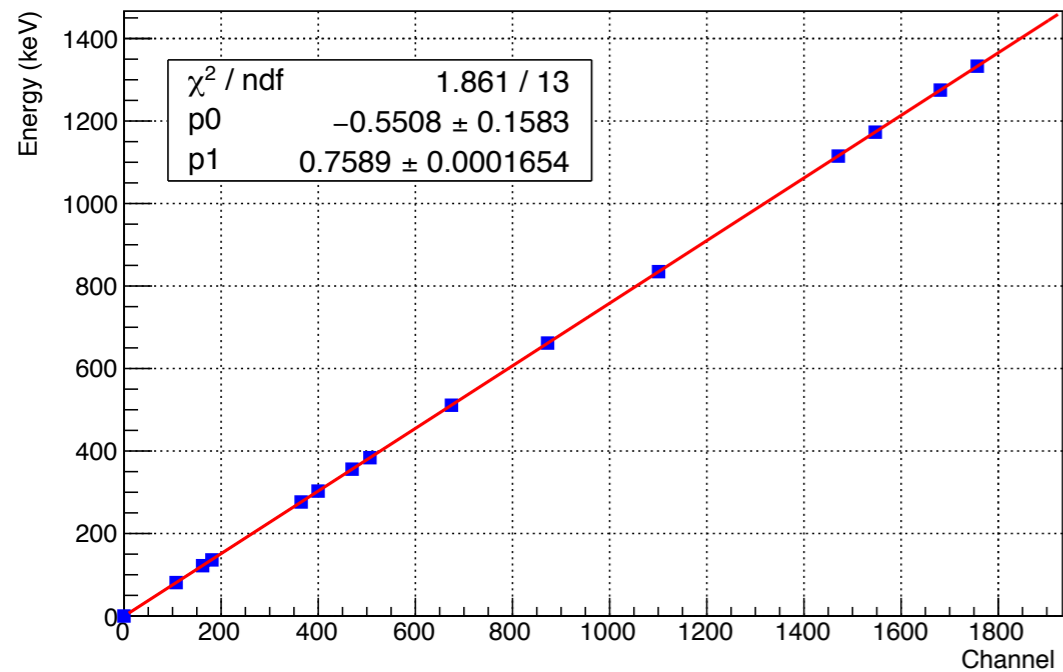
# **GCRF**

Sept 5th  
Estela, Adiv

# New detector setup and point source gammas

- New point source calibration and FEP efficiency measurement with new shielding, started yesterday.
- Source holder finally 3d printed.
- MC-> Gaussian smearing was included, shielding geometry is up and running, the source holder material and geometry will be included.
- Our led collimator for the cristal scan is ready, waiting for the collimator holder in the design department.

# Calibration and Full energy peak efficiency



# Dead Layer study, $^{133}\text{Ba}$

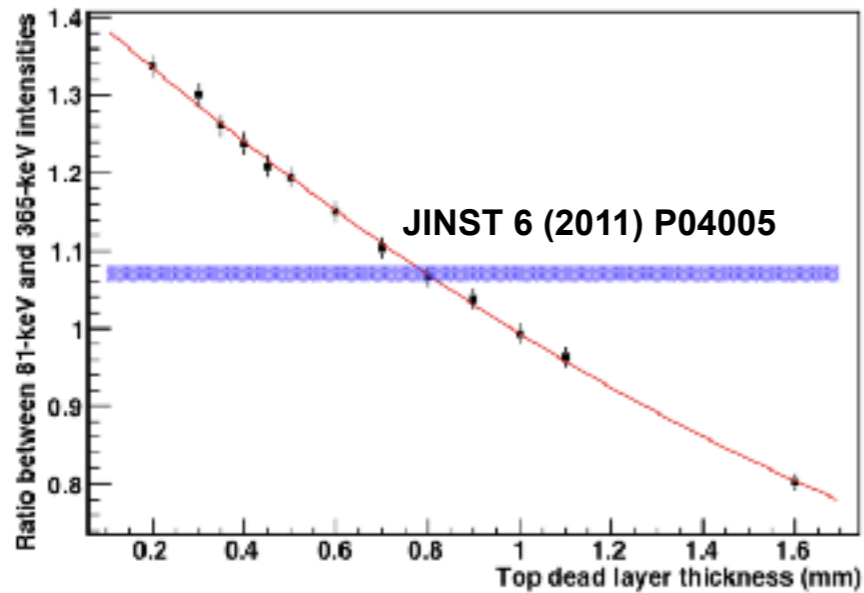
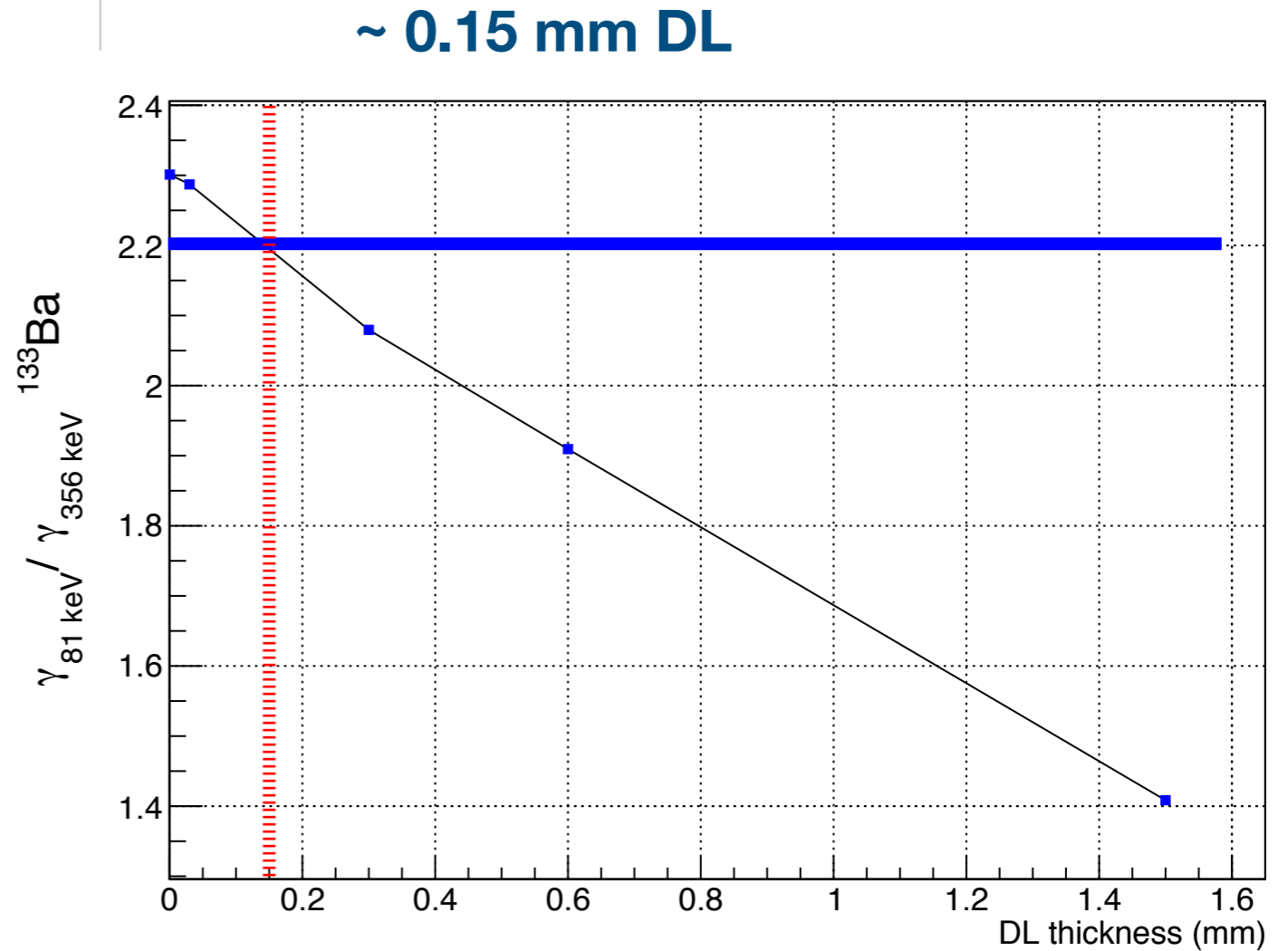


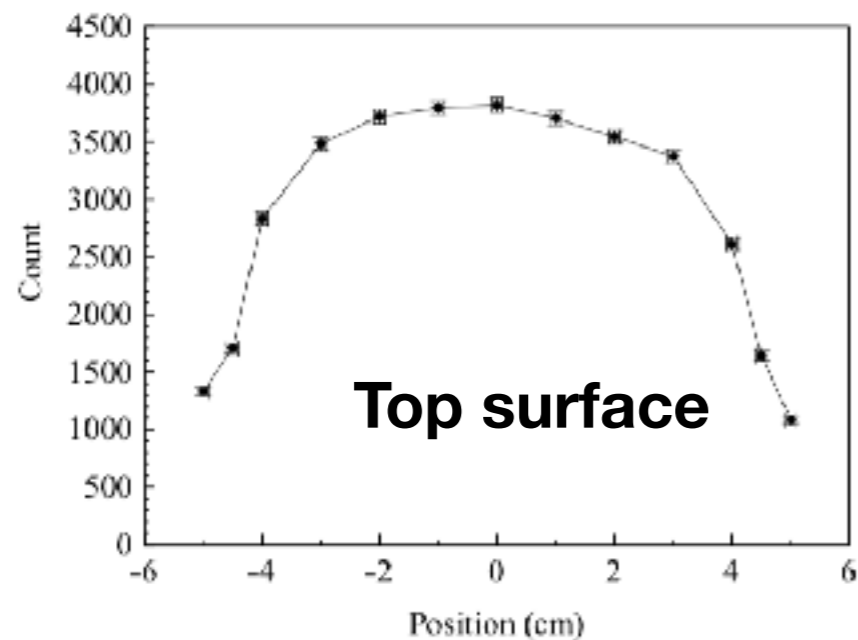
Figure 5. Ratio  $R$  of the intensities of the 81 keV and 356 keV  $\gamma$  lines of a  $^{133}\text{Ba}$  source as a function of top surface dead layer thickness, as evaluated from the Monte Carlo. Error bars account for the uncertainty and for the systematic uncertainty due to the description of the detector geometry. The data from Monte Carlo have been fitted with a quadratic curve. The blue shaded area represents the expected value of the ratio with  $1\text{-}\sigma$  uncertainty.

In JINST 6 (2011) P04005 DL is measured comparing the MC ratio of 81keV/356keV  $^{133}\text{Ba}$  intensity peaks.



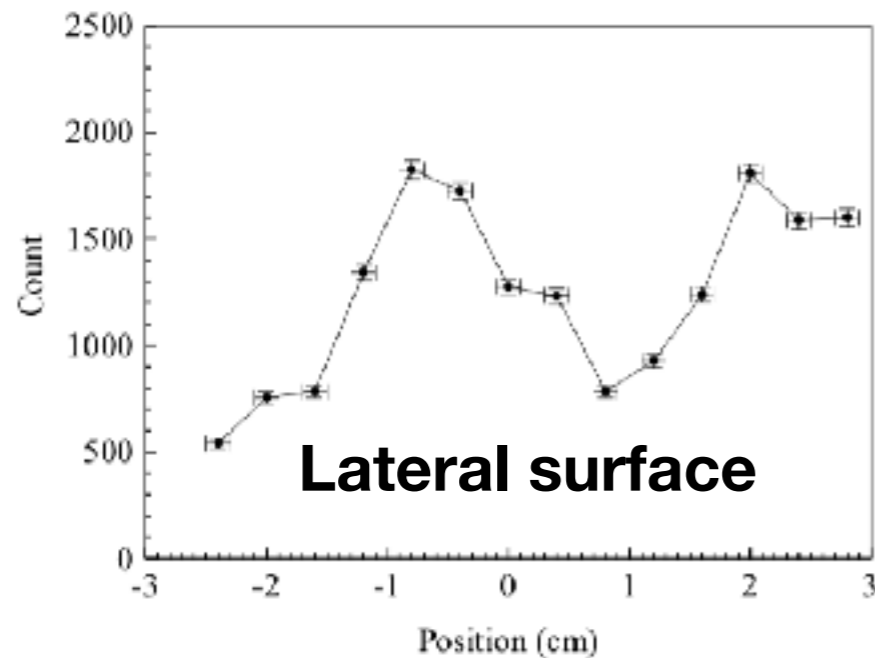
# Gamma scan of the Cristal

Using a collimator (lead 5x5cm square, ~1cm thick, with a 1mm hole in the center, under construction).

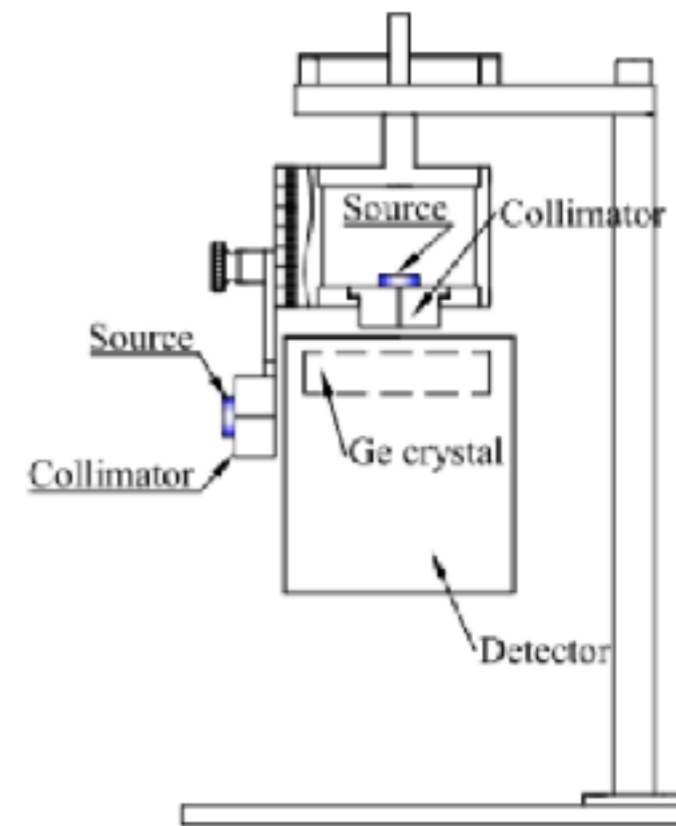


**Top surface**

**81keV, 133Ba**



**Lateral surface**



- Zhi Zeng, Yu-Hao Mi, Ming Zeng, Hao Ma, Qian Yue, Jian-Ping Cheng, Jun-Li Li, Rui Qiu, and Hui Zhang. Characterization study of a broad-energy germanium detector at CJPL. 2016.

**It will be done as soon as we have the collimator holder**

# summary

- Co60 MC with more simulated events (~2M). The source holder material and geometry will be included.
- Point source campaign in progress for more distances from the endcap.
- DL study for new data with shielding, simulation in progress.
- We will scan with collimated gammas as soon as the source holder is ready from IFUNAM workshop.

# Collaboration with environmental physics colleagues @IFUNAM

